Chemical Week

June 22, 1957

Price 35 cents

Should wages be linked to productivity? . . . p. 31

Vaccine for Asiatic flu is under test—just two weeks after U. S. firms get virus sample . . . p. 38

Dixie's lures for new industry: tax abatement, loans highlight state-by-state checklist . . . . . p. 47

Research managers in shirt sleeves. Far from their jobs, they seek new perspective . . . . p. 70

Urea demand heads for record 560,000 tons in '58. Here's how the business shapes up . . . . . p. 86

Interested in 1¼¢/lb. ethylene? Take a look at new process to utilize now-idle gas plants . p. 96

A McGRAW-HILL PU

unsym-DIMETHYLHYDRAZINE

now for civilian uses in tank-car quantities

Dimazine (Westvaco's brand unsym-dimethylhydrazine) is now available for civilian applications as well as for its originally developed military use as an outstanding rocket propellant. It has the mild basicity and the good reducing properties of the hydrazines. It is unique among alkyl-substituted hydrazines in possessing complete miscibility with both water and most organic solvents, including gasoline and other petroleum fractions. This combination of reducing and solvent properties shows special promise in anti-oxidant, stabilization, anti-skinning, and fuel-additive applications.

Formula $(CH_3)_2NNH_2$
Boiling Point 63°C
Density at 25°C 0.784 g/ml
Flash Point 1°C
Autoignition temp. 250°C

fmc chemicals

DEVELOPMENT DEPARTMENT
Westvaco Chlor-Alkali Division
FOOD MACHINERY AND CHEMICAL CORPORATION

South Charleston 3, West Virginia

BECCO® peroxygen chemicals • FAIRFIELD® pesticide compounds • FMC® organic chemicals • NIAGARA® insecticides, fungicides and industrial sulphur • OHIO-APEX® plasticizers and resins • WESTVACO® alkalis, solvents, phosphates, barium and magnesium chemicals

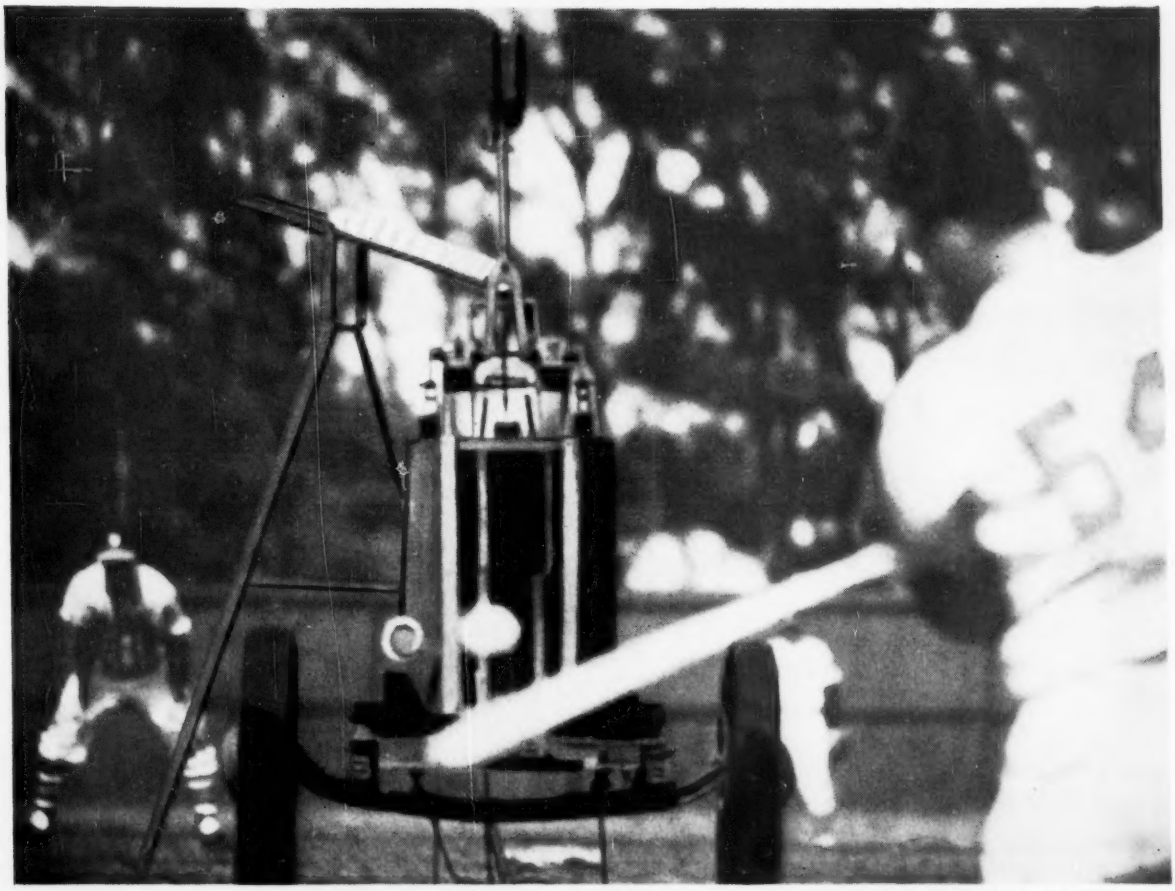

Photo courtesy Hofran Incorporated, Tampa, Fla.

Now—"Iron Mike" has met his master!

It's tough to make the starting team in the big leagues. But for a baseball, it's even tougher to qualify for batting practice. For here there's little letup in the pounding, the scuffing or the skinning. Particularly when "Iron Mike," the pitching machine, does the serving up.

A standout performer in this job—and in playgrounds, sand lots and batting ranges across the country—is an unusually durable ball with a molded-on, rubberized cord cover. This cover fully resists impact, abrasion and moisture, including repeated washing. As a result, the ball retains its size, shape, weight and "grippability" much longer than its higher priced counterparts.

Much of the success of this ball lies in the use of three Goodyear materials in the cover compound. PLIOFLEX, the light-colored, oil-extended rubber, lowers both weight and cost without loss of desirable qualities. PLIOLITE S-6B—the high styrene, rubber reinforcing resin—adds toughness and a leatherlike feel. And WING-STAY S—a nonstaining antioxidant—protects the original whiteness and physical properties against age and sunlight.

Mastering "Iron Mike" is just one example of how properly compounded PLIOFLEX rubber can answer many product problems. If you would like more information on how PLIOFLEX or PLIOLITE S-6B or WING-STAY S can help your products, including the latest *Tech Book Bulletins*, just write to: Goodyear, Chemical Division, Dept. F-9417, Akron 16, Ohio.

CHEMICAL
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DIVISION

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DEPARTMENT

Chemigum, Plioflex, Pliolite, Plio-Tuf, Pliovic, Wing-Stay—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

CHEMIGUM • PLIOFLEX • PLIOLITE • PLIO-TUF • PLIOVIC • WING-CHEMICALS

High Polymer Resins, Rubbers, Latices and Related Chemicals for the Process Industries

Chemical Week

TOP OF THE WEEK

June 22, 1957

- **CW Exclusive: Here are the chemicals Red China can buy,** now that British government drops its trade embargo .p. 59
- **Hospitals buy 26% of all pharmaceuticals,** and specialties makers find such sales are lucrative. .....p. 78
- **Unique hydraulic valve installation** is feature of new butadiene production plant .....p. 102

Vol. 80
No. 25

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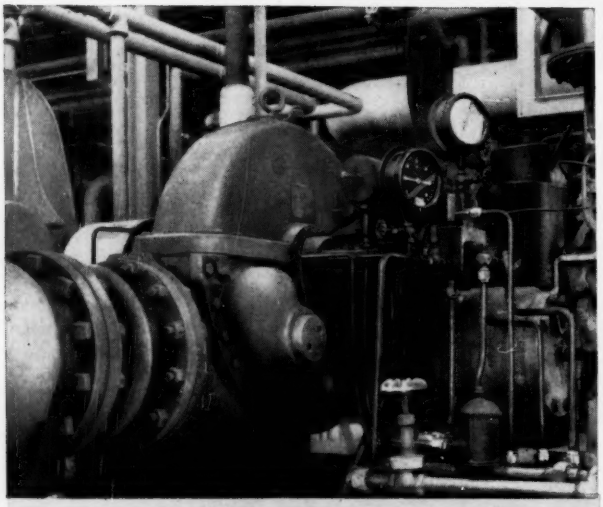
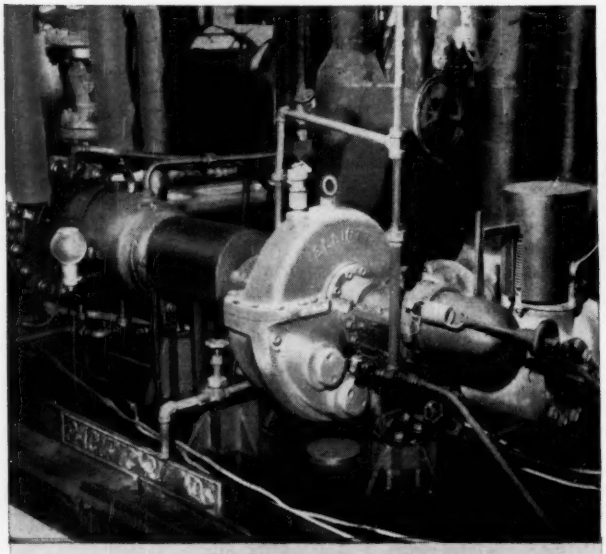
Watch CW Grow — 35,727 copies of this issue printed

ELLIOTT serves

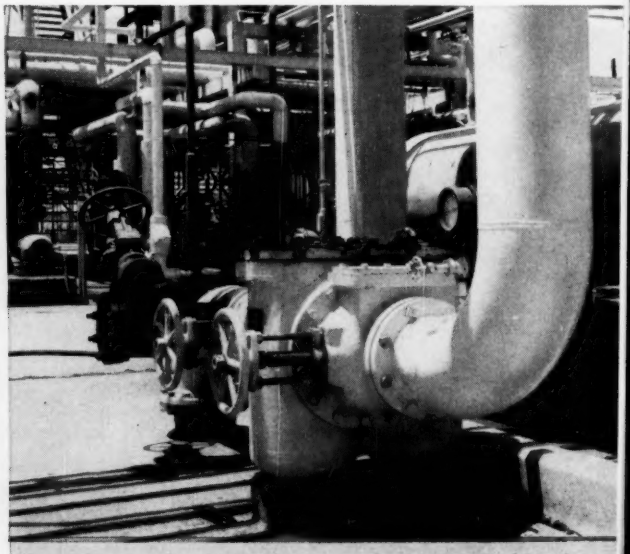


This Elliott 370-hp, 3240-rpm steam turbine drives a reciprocating compressor through a gear. The compressor serves a hydroformer unit.

These two Elliott 450-hp weather-protected outdoor motors, located in the bluff area near the docks, are used to drive centrifugal pumps which handle heavy naphtha from adjacent tankage.



One of eleven Elliott turbines driving centrifugal pumps at a lube oil unit.



Here an Elliott 8-in. twin strainer handles river water at a lube oil unit.

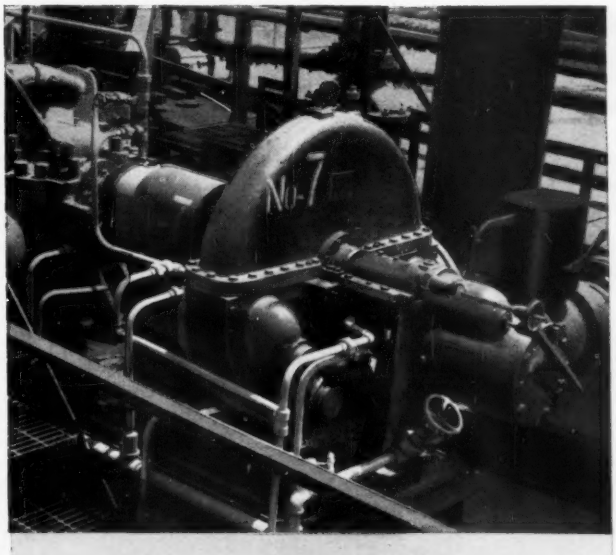
...most versatile refinery

Esso Standard's Baton Rouge Refinery—producing more products than any other—is served by Elliott Turbines, Motors, Twin Strainers, Steam Ejectors, Deaerating Heaters

When this Esso Standard Oil Company refinery started operations in 1909, it processed 2000 barrels of crude oil per day into only three products. Now it converts 340,000 barrels of crude oil per day into over 600 products—a world's record in respect to number of products. It is also rated the largest refinery in the United States based on crude running capacity.

More than 100 Elliott steam turbines, ranging in size from 7 to 900 hp, are used in this refinery to drive all sorts of pumps, fans and compressors. Over a score of Elliott twin strainers, sizes 2 in. to 24 in., and Elliott steam jet ejectors serving vacuum units have been installed. Elliott 300-hp, 400-hp, and 450-hp motors are driving pumps and an Elliott 1750-hp, 1800-rpm induction motor is driving a centrifugal gas compressor. There are also four Elliott deaerating feedwater heaters.

Here is another dramatic illustration of how highest-quality steam and electrical products, manufactured by Elliott, serve leading industries. For information on how Elliott products can help you, call your nearby Elliott District Office or write Elliott Company, Jeannette, Pa.



Elliott Turbines, **from small single-stage to large multi-stage types, assure highest-quality, long-term continuous service. This typical installation, operating on a 24-hour-a-day basis, is a 460-hp, 1750-rpm Elliott turbine which drives a river water booster pump. Bulletin H-22B describes the features which have resulted in the widespread use of Elliott YR turbines.**

ELLIOTT Company

Q7-1

STEAM TURBINES • MOTORS • GENERATORS • DEAERATING HEATERS • EJECTORS • CONDENSERS • CENTRIFUGAL COMPRESSORS • TURBOCHARGERS • TUBE CLEANERS • STRAINERS

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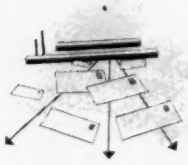
of interest to every customer

WE BELIEVE IN CLOSE CUSTOMER RELATIONS

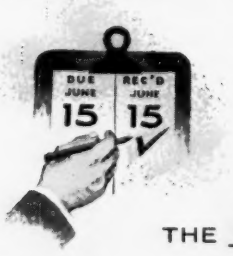
We believe that the closer our understanding of your operations and problems, the greater is our capacity to serve your interests. Accordingly we are organized throughout sales and engineering for the maximum application of study to your needs, with continual close contact maintained for the duration of every project. (We are ready when you are.)

WE BELIEVE IN PROMPT INQUIRY HANDLING



Because inquiries can smother in piles of paper, our inquiry processing is fast and thorough. A complete Customer Service Department has full responsibility for preparing specifications to your requirements, formal quotations, order entering, and the processing of sales correspondence and relative communications. (May we have your inquiry?)

WE BELIEVE IN KEEPING DELIVERY PROMISES



The whole Patterson organization becomes part of the promise when a delivery date is made. Fallibility is human, but we set our sights squarely on the target's bull's-eye from the day the promise is made—and our score is close to perfection today. (When do you need that new equipment?)

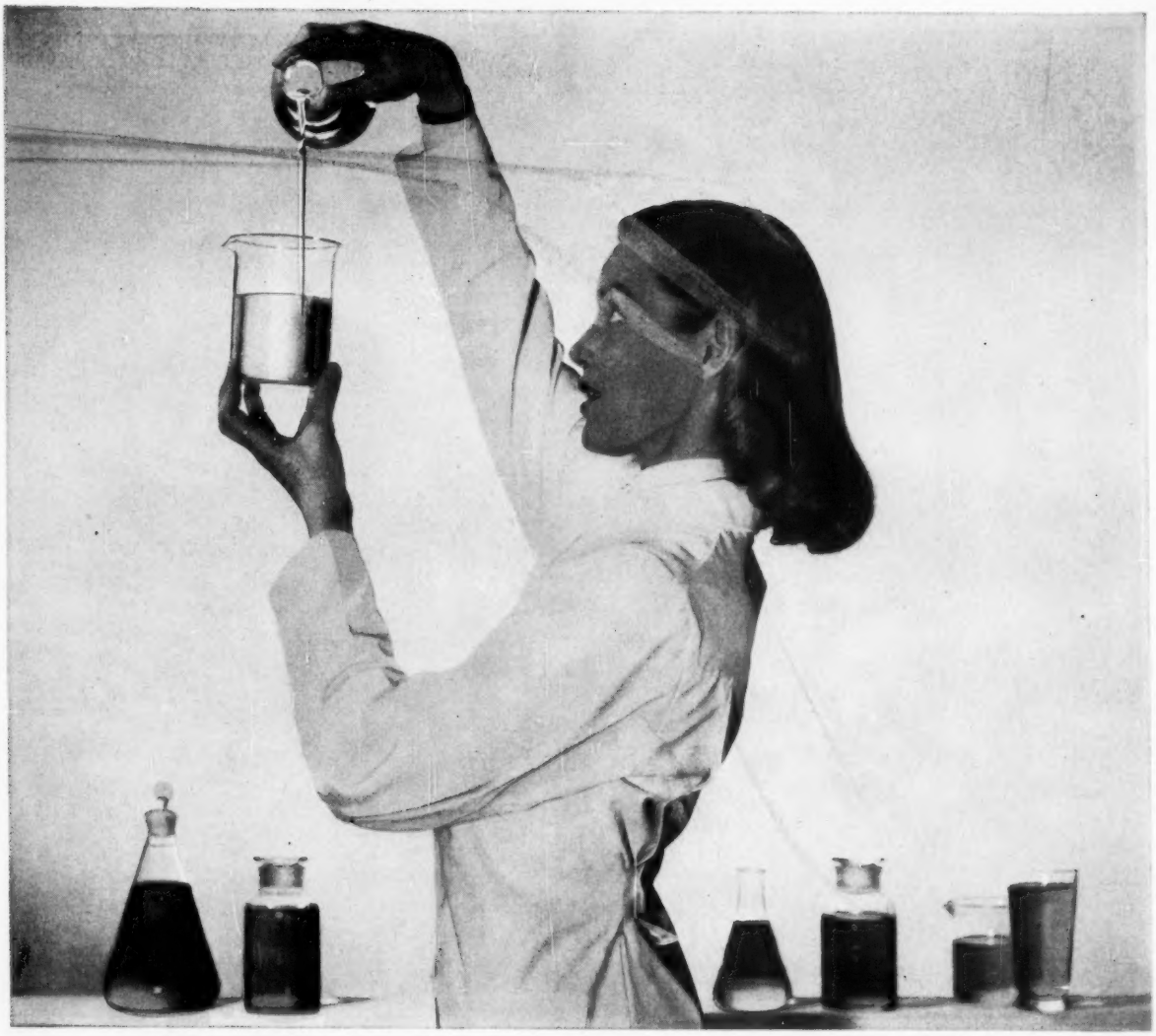
THE *Patterson* FOUNDRY AND MACHINE COMPANY

ADVANCED PROCESS EQUIPMENT OF ENDURING SATISFACTION

A Subsidiary of Ferro Corporation

East Liverpool, Ohio, U.S.A.

THE *Patterson* FOUNDRY AND MACHINE CO. (CANADA) LTD
Toronto, P.O., Canada



Pretty colors not welcome!

INDUSTRY makes many products that must be crystal-clear—without a trace of color or contaminants. A good example is the liquid sugar being poured above. Processors have found that the most efficient and economical way to remove unwanted color from most liquids is to circulate them through a bed of Pittsburgh granular activated carbon—small coal-derived particles that look like tiny, hard black sponges. They're so porous that a single pound contains *125 acres* of adsorbent surface!

These amazing granules were developed by Pittsburgh Coke & Chemical. In addition to color removal, they're widely used today for pharmaceutical purification, solvent recovery, air and water purification and dozens of other vital adsorption processes. They're another outstanding example of Pittsburgh Coke's unique ability to create better, more useful products from coal . . . and to guard their quality and purity through every step of production, from coal to finished product.

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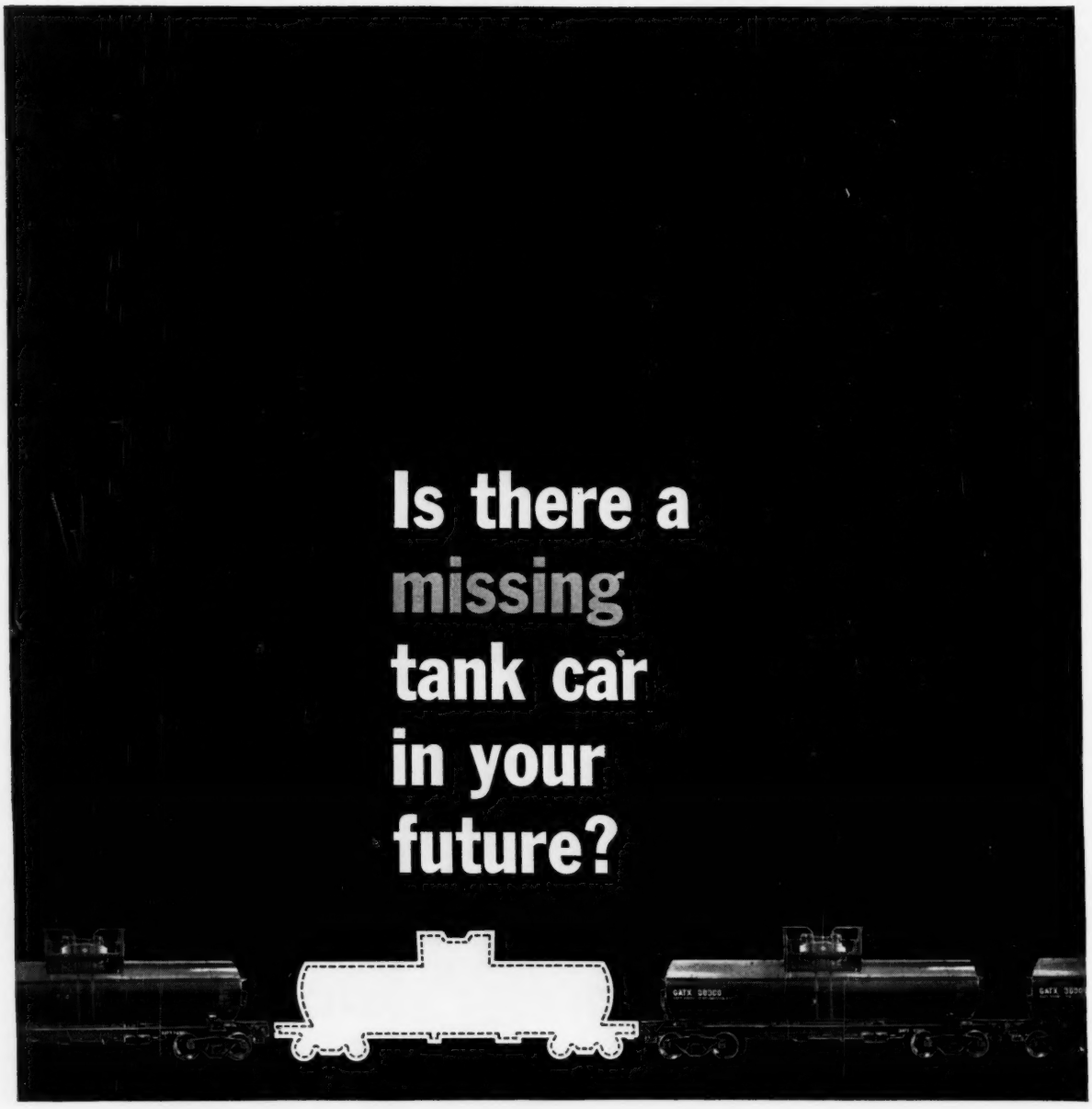

That's almost certain to be the plight of companies who don't plan for their tank car requirements in the decade ahead. It's no secret that available general-purpose tank cars are going to be limited. With normal obsolescence of today's facilities, the continuing steel shortage, and with forecasts pointing to a more than 50% expansion in our economy, *liquid product shipments may be difficult . . . may miss tomorrow's sales opportunities.*

P. S. Plan now to discuss your long-range needs with our GATX District Man. You'll find . . . it pays to plan with General American.

GENERAL AMERICAN TRANSPORTATION CORPORATION
135 South La Salle Street • Chicago 90, Illinois

LOOK AT THESE VERSATILE OIL-SOLUBLE SURFACE-ACTIVE AGENTS

Every day the ALKATERGES® are being utilized in new industrial applications. A close look at these versatile surface-active agents may suggest additional ways they can be profitably used to help you solve a particular problem. Samples of ALKATERGES C, A, E and T are available, as well as helpful technical data sheets. Write for yours today.

LOOK INTO THESE USES

EMULSION STABILIZERS In oil-in-water emulsions, ALKATERGES and their soaps are effective as emulsion stabilizers or auxiliary emulsifying agents. They aid in the dispersion of insoluble calcium and magnesium soaps.

PENETRANTS Solutions of the salts of ALKATERGES are useful as penetrants in textile and paper manufacturing. Reported to reduce resin consumption in waterproofing paper.

PIGMENT-GRINDING ASSISTANTS; PIGMENT DISPERSANTS ALKATERGES convert stiff pigment-oil mixtures into fluid, easy-to-grind compositions. Also recommended in resin-carbon black formulations.

CORROSION PREVENTION By neutralizing perspiration acids, the ALKATERGES protect metals subject to corrosion through handling. Industrial users confirm the exceptional qualities of Alkaterge-T as an oil-soluble corrosion inhibitor. Manufacturers of rust preventative oils, lubricants, cutting oils, corrosion resistant greases and extruding oils will find evaluation profitable.

DISPERSING AGENTS ALKATERGES are recommended as dispersants for flattening agents in varnishes and enamels and for any finely-divided solid in nonpolar liquids.

ACID ACCEPTORS Since most of their salts are somewhat oil soluble, ALKATERGES can be used to tie up acidity from deterioration of oils or additives. Useful also as perspiration acid neutralizers in corrosion-preventive oils.

ANTI-FOAMING AGENTS Used alone or in carriers, ALKATERGES control certain foams encountered in processing organic materials such as manufacturing antibiotics. They do not turn rancid and, in the concentration normally used, they are nontoxic to most antibiotic microorganisms. Tests indicate that Alkaterge-A is useful as an anti-foam agent in non-aqueous systems.

Write for complete information and samples.

DISCOVER THE NITROPARAFFINS!

INDUSTRIAL CHEMICALS DEPARTMENT

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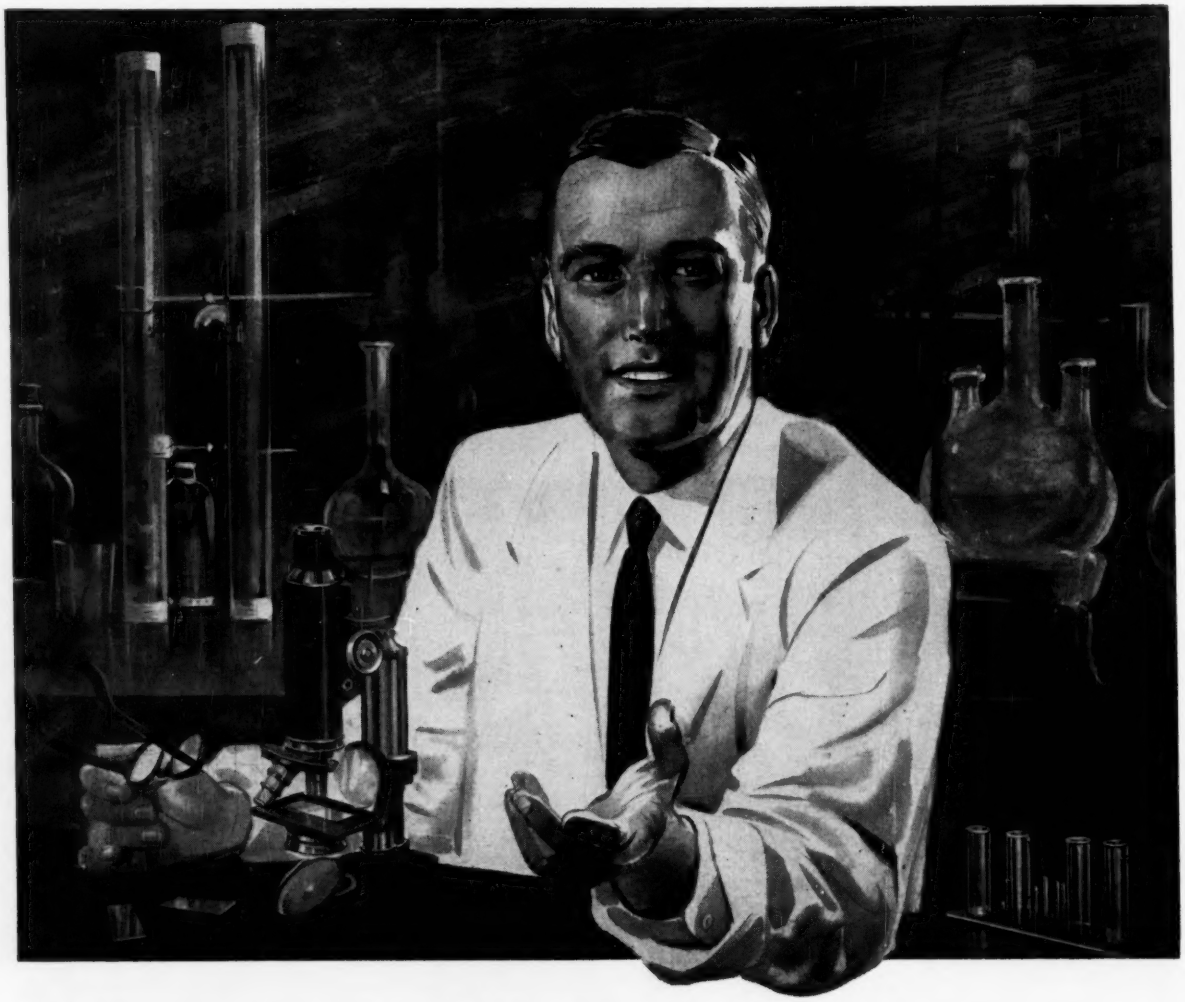


Ask the man from Vanderbilt... about the NEW FORM of regular VEEGUM

VEEGUM F, the latest addition to the Veegum series of inorganic suspending and emulsifying agents, is now available as a micro fine white, free-flowing powder.

VEEGUM F is regular Veegum ground so fine that substantially all will pass through a 325 mesh screen.

With all the advantages of Veegum, this form is of special interest to those who formulate dry and are looking for an agent that will rehydrate rapidly.

VEEGUM

Veegum is a purified colloidal magnesium aluminum silicate. Available in several forms, it offers very superior suspending and emulsifying qualities.

Veegum disperses hydrophobic materials in water systems without lowering surface tension. Emulsions of many types of oils, fats, and waxes are permanently stabilized by less than one percent of Veegum. Aqueous dispersions of Veegum are compatible with alcohols, polyglycols, and other organic solvents.

Veegum gives high solids suspension at low viscosity with improved stability.

Veegum is nontoxic, nonirritating, opaque, white, odorless, and tasteless.

Please send

☐ **VEEGUM** Bulletin C122 and data on **VEEGUM F** ☐ **VEEGUM F** sample

(state application) _____

NAME _____

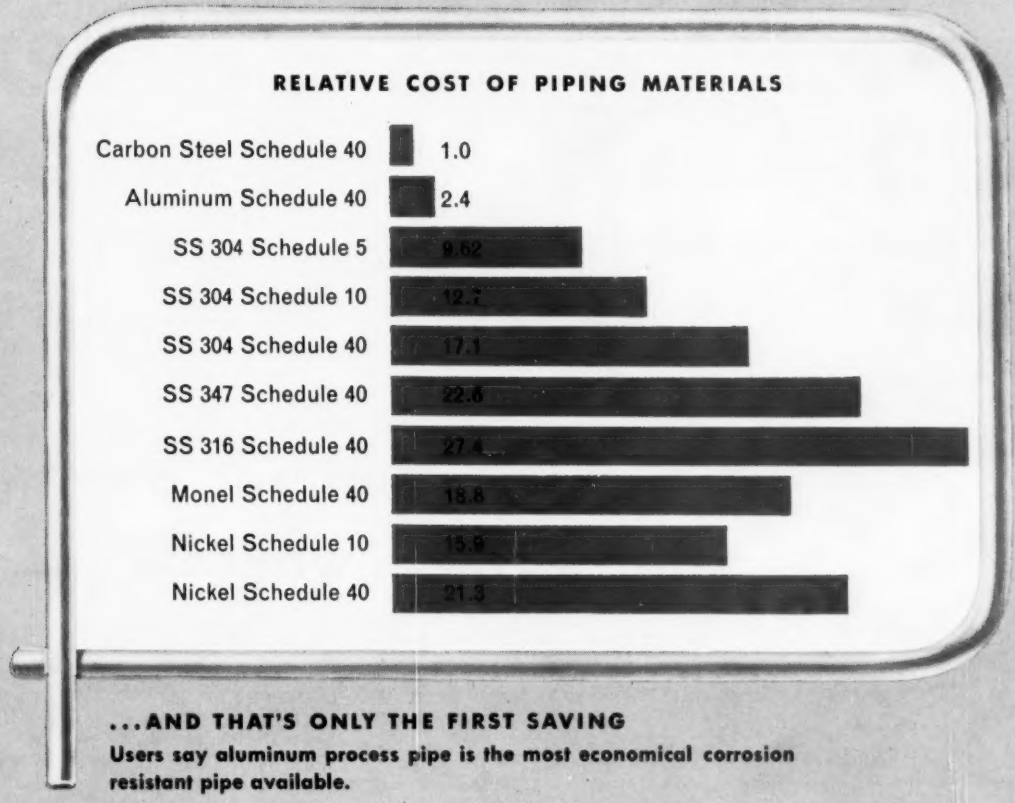
POSITION _____

(please write on or attach to company letterhead)

← **WRITE TODAY FOR VEEGUM SAMPLES AND TECHNICAL DATA**

R. T. VANDERBILT CO. SPECIALTIES DEPARTMENT 230 PARK AVE., NEW YORK 17, N. Y.

Here's the cost story on Reynolds Aluminum process pipe



...AND THAT'S ONLY THE FIRST SAVING

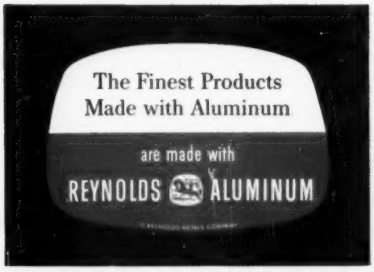
Users say aluminum process pipe is the most economical corrosion resistant pipe available.

THESE ARE THE REASONS:

- Aluminum costs less to buy.
- Aluminum costs less to install because of light weight and weldability.
- Aluminum resists corrosive effect of hydrogen peroxide, nitrogen solutions, many acids, alcohols, foods, sweet and sour crudes, raw or refined gases, kerosene, gasoline, napthas, and many other process liquids.
- Aluminum is non-sparking for greater safety to plant and personnel.
- Aluminum requires little maintenance—has longer life.

Write for this important literature: "Corrosion Keys for Aluminum" and "Aluminum Process Pipe".

For more information on how you can save with Reynolds Aluminum Process Pipe, call the Reynolds office listed under "Aluminum" in classified telephone directories, or write *Reynolds Metals Company, P.O. Box 1800-CM, Louisville 1, Kentucky. International Division, 19 East 47th Street, New York, 17, N.Y.*



See "CIRCUS BOY", Reynolds exciting dramatic series, Sundays, NBC-TV

mirror, mirror on the wall . . . where's the best Plant Site of all?

If clairvoyant mirrors — or divining rods — played a part in site selection, chances are they'd point with prophetic accuracy to the Land of Plenty. But, in reality, a multitude of facts must be gathered and analyzed to discover the most nearly perfect location. If you're site seeking, check the progressive six-state area served by the Norfolk and Western — for ideal chemical plant sites.

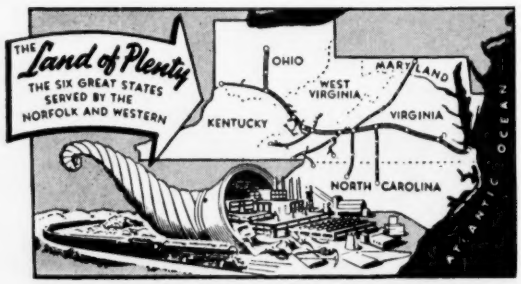
Here you'll find materials, manpower, and markets *in balance,* assuring your plant of favorable operating and marketing conditions. The Land of Plenty's location is quickly accessible to established markets and to thriving new ones, and most of your raw material requirements are at hand or within short-haul distances.

Norfolk and Western plant location specialists have complete information on sites in the Land of Plenty, and they understand your problems. Tell them your specific needs and they'll go to work for you without obligation — promptly, in detail, and in confidence.

Write, wire or call:

L. E. Ward, Jr., Manager
Industrial and Agricultural Dept.
Drawer CW-767 (Phone Diamond 4-1451, Ext. 474)
Norfolk and Western Railway
Roanoke, Virginia

Norfolk and Western RAILWAY

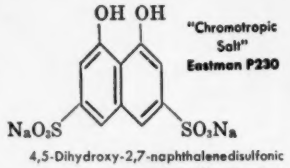


...AMONG SOME 3500 ORGANICS

Eastman P230

Sometimes we tire of the sport of baiting born salesmen by admitting out loud we know no uses for many of the compounds we sell. Then we can turn to something like chromotropic acid, for which we know enough uses to bring the average back up.

Do you want to determine titanium? Buy **Eastman P230** and see *Anal. Chim. Acta*, 6, 7. Also Volume I of Feigl's *Spot Tests* and Volume I of Welcher's *Organic Analytical Reagents*.



"Chromotropic Salt" Eastman P230

4,5-Dihydroxy-2,7-naphthalenedisulfonic Acid Disodium Salt

Hexoses? Buy **Eastman P230** and see *Anal. Chem.*, *25*, 771.

Chromium? Buy **Eastman P230** and see Welcher.

Formaldehyde and formic acid? Send for our abstract and *then* buy **Eastman P230.**

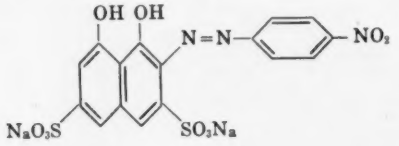
Silver? Buy **Eastman P230** and see Welcher and Feigl.

Serine? Buy **Eastman P230** and send for our abstract. (A molecule of formaldehyde splits off for each molecule of serine converted to glycine.)

Methanol? Buy **Eastman P230** and see *J. Assn. Off. Agri. Chem.*, August '51.

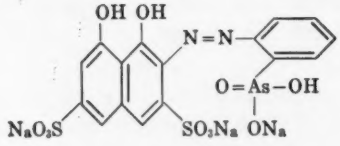
Mercury? Buy **Eastman P230** and see Welcher.

You can also buy **Eastman P230** and couple it with diazotized *p-Nitroaniline* (Eastman 179) to



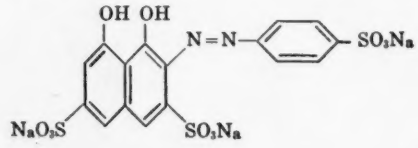
with which you can spot-test for borates, according to Feigl. Unless you need the exercise, that would be a little quixotic because you can buy the reagent as *4,5-Dihydroxy-3-(p-nitrophenylazo)-2,7-naphthalenedisulfonic Acid Disodium Salt* (Eastman 4411).

East of the Oder, meanwhile, they have been busy diazotizing *o-Arsanilic Acid* and coupling it with chromotropic acid (doubtless using exotic brands instead of Eastman 6747 and **Eastman P230,** respectively) to get



which democrat or monarchist can purchase as *3-(2-Arsonophenylazo)-4,5-dihydroxy-2,7-naphthalenedisulfonic Acid Trisodium Salt* (Eastman 7302, with the name slurred to "Arsenazo"). If he reads and believes scientific Russian, he may buy it for the determination of beryllium, rare earths (as a group), and aluminum in Al-Ni-Cr and Al-Mg alloys. (We'll supply the references, if asked.)

And still the roll of analytical uses for **P230** unfolds in wild profusion. Coupled with diazotized *Sulfanilic Acid* (Eastman 238), it makes



available as *4,5-Dihydroxy-3-(p-sulfophenylazo)-2,7-naphthalenedisulfonic Acid Trisodium Salt* (Eastman 7309, referred to by aficionados as "SPADNS"). It is an indicator for 1) the titration of thorium, 2) the complexometric titration of zirconium, 3) the titrimetric determination of micrograms of fluoride ions. (Abstract on request.)

If those aren't enough uses, perhaps you'd better buy something else.

A scoop for radicals

"I have in my hand a little bottle which contains some dry, dark violet prisms of **a free radical**," you will casually remark to acquaintances and students suspected of being unfamiliar with *J.A.C.S.*, *72*, 1051; *J. Org. Chem.*, *17*, 1437; or *J. Chem. Soc. 1954*, 3574 and *1956*, 1127. It will be diphenylpicrylhydrazyl. You will have made it by treating *1,1-Diphenyl-2-picrylhydrazine* (Eastman 7365) with lead peroxide. It will keep on the shelf for a while but not long enough for us to have relieved you of the preparation chore. Being reasonably inert to molecular oxygen, it will make a very fine scavenger with which to scoop other, less long-lived free radicals out of a reaction. As your insight will at once tell you, it will inhibit polymerization, abstract hydrogen from certain molecules, and be paramagnetic because of its unpaired electron.

News, real news

The radio and TV newscasters have apparently failed to grasp the importance of this (very few of them being biochemists), but word has very recently been received that DL-*Methoxyphenylacetic Acid* is **a selective precipitant for sodium** in the presence of large amounts of K^+, Ru^+, NH_4^+, Mg^{++}, Cl^-, NO_3^-, PO_4^{---}, SO_4^{--}, and up to 30 mg per ml of Li^+. And we gladly sell it as Eastman 7361, even providing an abstract if you like.

Any or all of these abstracts and/or organics come from *Distillation Products Industries*, Eastman Organic Chemicals Department, Rochester 3, N. Y. (There are more. Some 3500 organics in our Eastman Organic Chemicals List No. 40. If you haven't a copy, let us know.)

DPi

Eastman Organic Chemicals

Also...vitamins A and E in bulk...distilled monoglycerides

Distillation Products Industries *is a division of* **Eastman Kodak Company**

You get *personalized container service* from

Your US Steel representative makes it his business to understand yours, so he can help you select the right container for your needs. Profit from this know-how and personal service next time you shop for containers. Your US Steel salesman is always as near as your telephone.

Profit from all 5 of these US Steel extras, too.

- **Best rust protection**—there's more zinc phosphate on every USS rust-inhibited container.
- **Eye-catching containers**—your containers not only ship your product, but advertise it, too—when color-decorated by U. S. Steel.
- **Prompt container delivery**—a 7-point factory system gives you next-door service anywhere—anytime.
- **Widest container variety**—from 2½-gallon pails to 55-gallon drums, including stainless.
- **Lower unit cost**—USS stainless-steel containers with their patented design give lifetime service at unequaled long-run economy.

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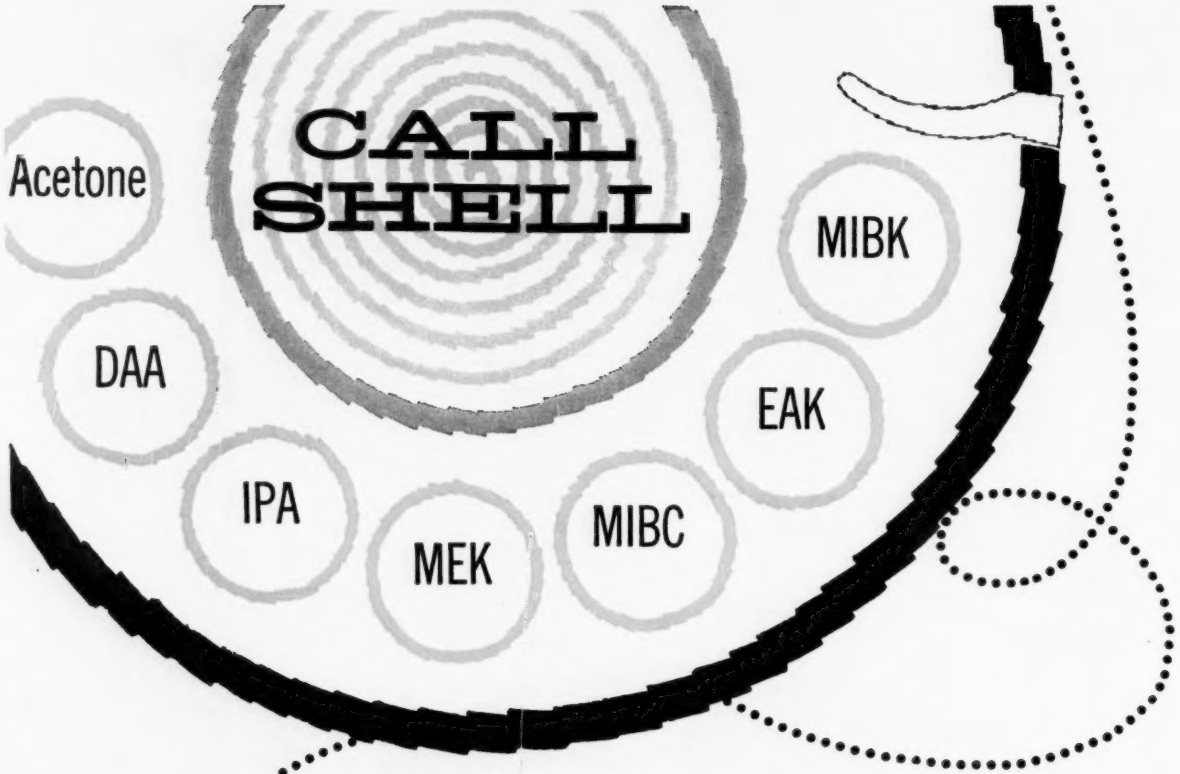
USS STEEL DRUMS

UNITED STATES STEEL



...for all your solvent needs

WHEN you "pool" your solvent orders with Shell Chemical, you save money on multiproduct bulk shipments.

Shell's modern compartmented tank cars and tank trucks offer you an opportunity to buy at bulk prices even though individual solvents are ordered in less than tank car quantities. You are sure, too, of prompt deliveries from conveniently located bulk depots.

Whether you make nitrocellulose or vinyl lacquers, the high purity of Shell Chemical's "Quality Group" solvents makes them *worth more* to you. You gain in ease and flexibility of formulation . . . because you buy active and latent solvents separately. You blend them to *your own* requirements.

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SHELL

Business
Newsletter

CHEMICAL WEEK
June 22, 1957

Petroleos Mexicanos is set to build a 15-million lbs./year polyethylene plant in Mexico City. It will be a low-pressure unit, operated under license from Phillips Petroleum—formal contracts will be signed shortly. Expected in operation by 1959, the new plant will be built at Pemex's Atzcapotzalco refinery, where Mexico's second cat-cracker is now under construction.

Just how Pemex will finance the new unit is not clear. Although Pemex will adapt Phillips' polyethylene process patents, it is not said to be seeking financial aid from Phillips. For some months, Pemex has been negotiating for a $50-100-million loan from French banks.

•

Sun Chemical's newest acquisition, Bensing Brothers & Deeney, will greatly expand Sun's position as a supplier of flexographic inks (*CW, June 1, p. 88*). Sun says it will operate its new division under the BB&D name, and with its present management.

•

Organized labor cracked the Orange County, Texas, chemical complex for the first time last week, when Oil Chemical & Atomic Workers Union was elected bargaining agent for 46 employees of Acheson Dispersed Pigments.

Encouraged by their success, OCAW officials will likely renew their efforts to organize the other chemical plants in the county. DuPont, Spencer, Allied and Firestone are nonunion. The union has as one of its strongest areas the process plants in nearby Jefferson County.

In another Texas labor development, there's still dispute about the shutdown of the Texas-U. S. Chemical Co. plant (Port Neches). Management claims the shutdown is the result of union picketing; OCAW officials say they had called no strike and that the shutdown is a lockout. Neches Butane Products Co., supplier of butadiene to Texas-U. S., has had to lay off workers as a result of the stoppage at this major customer.

•

As expected, the Supreme Court decision against Du Pont has given rise to secondary legal actions. Latest is the claim of two General Motors stockholders that since Du Pont's contracts with GM have been judged in violation of antitrust laws, Du Pont should return, in the form of treble damages, all profits it has made from those contracts.

The stockholders, who hold about 1,500 GM shares, filed suit for $126 million (to be paid to GM). Their attorney said that $90 million in damages will be asked; another $36 million is sought because GM overpaid Du Pont by $12 million. Du Pont spokesmen note that the Supreme Court agreed with the trial court that "considerations of price, quality and service were not overlooked by either Du Pont or GM."

Du Pont will doubtless present further arguments at the hearing, which has not yet been scheduled.

Du Pont's Canadian subsidiary is reportedly unaffected by the U. S. Supreme Court decision. Dealing with all motor companies on an equal basis, and operating entirely independently of the U. S. parent firm, it even competes with the latter in some facets of the U. S. fabrics and finishes markets.

•

Phosphorus furnace design is in the news. As Central Farmers Fertilizer Co. began construction of its furnace at Georgetown, Idaho, Central Farmers and Monsanto Chemical reached agreement on one phase of a lawsuit in which Monsanto has charged that Central is to use some of its process secrets in building the $7.5-million plant. (Ex-Monsanto employee Charles M. Miller is accused of having provided the secrets.)

Now the firms have agreed that a Monsanto representative may inspect the design, engineering and process of the plant Central is building. But Monsanto must show Central's representatives any part of the Monsanto "secret design" that it feels Central has duplicated. Trial cannot start until there's settlement as to just what are the allegedly secret portions of the process. Settlement is unlikely to be reached before fall.

•

Prices of common stock of four chemical firms soared to new highs last week.

Dow and Dobeckmun Co. (Cleveland) shares moved rapidly after a Dow official revealed Monday that the two companies were having preliminary merger talks. The packaging materials firm, Dobeckmun, has been a popular target, according to reports, for merger-minded companies. Dow's stock climbed from Monday's 67 to a new high of 68⅛ on Friday, while Dobeckmun climbed from its previous 33¼ high to a record 39⅞.

The Olin Mathieson flurry is ascribable to the revelation that its E. R. Squibb division has developed an anticancer "steroid agent" (*see also p. 67*). OM volume of 14,800 shares on Monday leaped to 106,200 shares on Thursday, while the stock's price moved up from 56¼ to Thursday's record of 58½.

Bristol-Myers' new record came on the heels of a patent award in which Bristol-Myers, on the surface at least, seemed to have secured a tight hold on tetracycline markets. The patent covers administration of the antibiotic when compounded with phosphates—a combination thought to be the most desirable method of dosing yet developed. Bristol-Myers' stock moved up 4 points, to 54½, last Tuesday, once word of the award got around. This was 3¼ points over the stock's high for 1957.

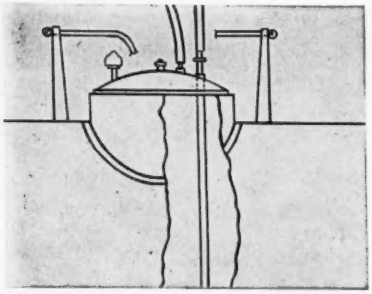
This week, however, things were relatively calm. On Monday, the Dow, Dobeckmun, OM, and B-M stocks closed at 67⅞, 42½, 56⅝ and 53⅞, respectively.

BRIEFS

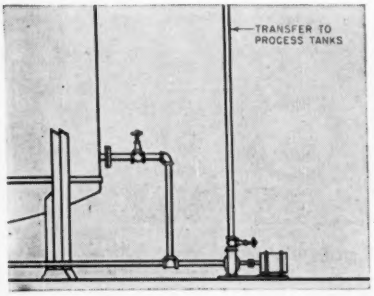
for buyers of

Caustic Soda
Chlorinated Solvents
Phosphorus Chlorides

Caustic soda handling



from tank car



to process . . . is the subject of *Caustic Soda Engineering and Handling Guide*, the newest Hooker bulletin.

Contents include recommended methods for unloading, diluting, piping, and storing liquid caustic soda.

You'll also find advice on construction materials, detailed diagrams of equipment in typical installations, and a section on safety.

There are 18 full-page graphs, charts, and tables with which you can predict and control the behavior of liquid caustic soda under different operating conditions.

For a copy, check the coupon for Bulletin 102.

Now you can get these five chlorinated solvents from Hooker

All five of the following solvents are completely miscible with acetone, benzol, butanol, carbon tetrachloride, diethyl ether, ethylene dichloride, linseed oil, petroleum ether, methanol, and Solvesso No. 2.

None are classified as flammable under ICC regulations.

ortho-Dichlorobenzene

Freezing point	−18° to −22°C.
Distillation range	4°C. inc. 179.5°C.
Specific gravity (15.5°/15.5°C.)	1.313

Monochlorobenzene

Freezing point	−44°C.
Distillation range	1°C. inc. 132°C.
Specific gravity (15.5°/15.5°C.)	1.113

Monochlorotoluene

Freezing point	below −45°C.
Distillation range	158.3° to 161.7°C.
Specific gravity (15.5°/15.5°C.)	1.080

Trichlorobenzene

Freezing point	10°C. Max.
Distillation range	5°C. Max. inc. 216°C.
Specific gravity (15.5°/15.5°C.)	1.466

Nialk® Trichlorethylene

Freezing point	−86.4°C.
Distillation range	86.6° to 87.8°C.
Specific gravity (15°/4°C.)	1.469

If you would like specifications and other data on these Hooker solvents, please check the coupon.

Three chemicals meant for browsing—compliments of Oldbury® Products

The only claims to fame possessed by our two phosphorus chlorides and our phosphorus oxychlorides are these:

They're extremely versatile intermediates.

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All three are high in quality and purity.

Our PHOSPHORUS TRICHLORIDE (PCl_3, as you might guess) is used chiefly as a chlorinating agent. It's particularly useful in the preparation of acid chlorides where it undergoes reactions similar to those of thionyl chloride (which we also sell). If you're interested in making phosphite or phosphonate esters, you'll discover it's useful there, too. Two more mundane uses are as a condensing agent and as a catalyst.

Oldbury PHOSPHORUS PENTACHLORIDE is naturally even more reactive than the trichloride. Except for this greater reactivity, its reactions are much the same in nature as trichloride's.

Quite a different product, however, is Oldbury PHOSPHORUS OXYCHLORIDE ($POCl_3$). You can use this to make organic phosphates such as *tricresyl phosphate*, which you might use in plasticizers, gasoline additives, or what have you. Of course, you could also use this compound to replace various groups with chlorine.

For more information about these Oldbury products, check the coupon.

For more information on chemicals mentioned here, check below:

- ☐ *Caustic Soda Engineering and Handling Guide*, Bul. 102
- ☐ *ortho*-Dichlorobenzene
- ☐ Monochlorobenzene
- ☐ Monochlorotoluene
- ☐ Trichlorobenzene
- ☐ Trichlorethylene
- ☐ Phosphorus Trichloride
- ☐ Phosphorus Pentachloride
- ☐ Phosphorus Oxychloride

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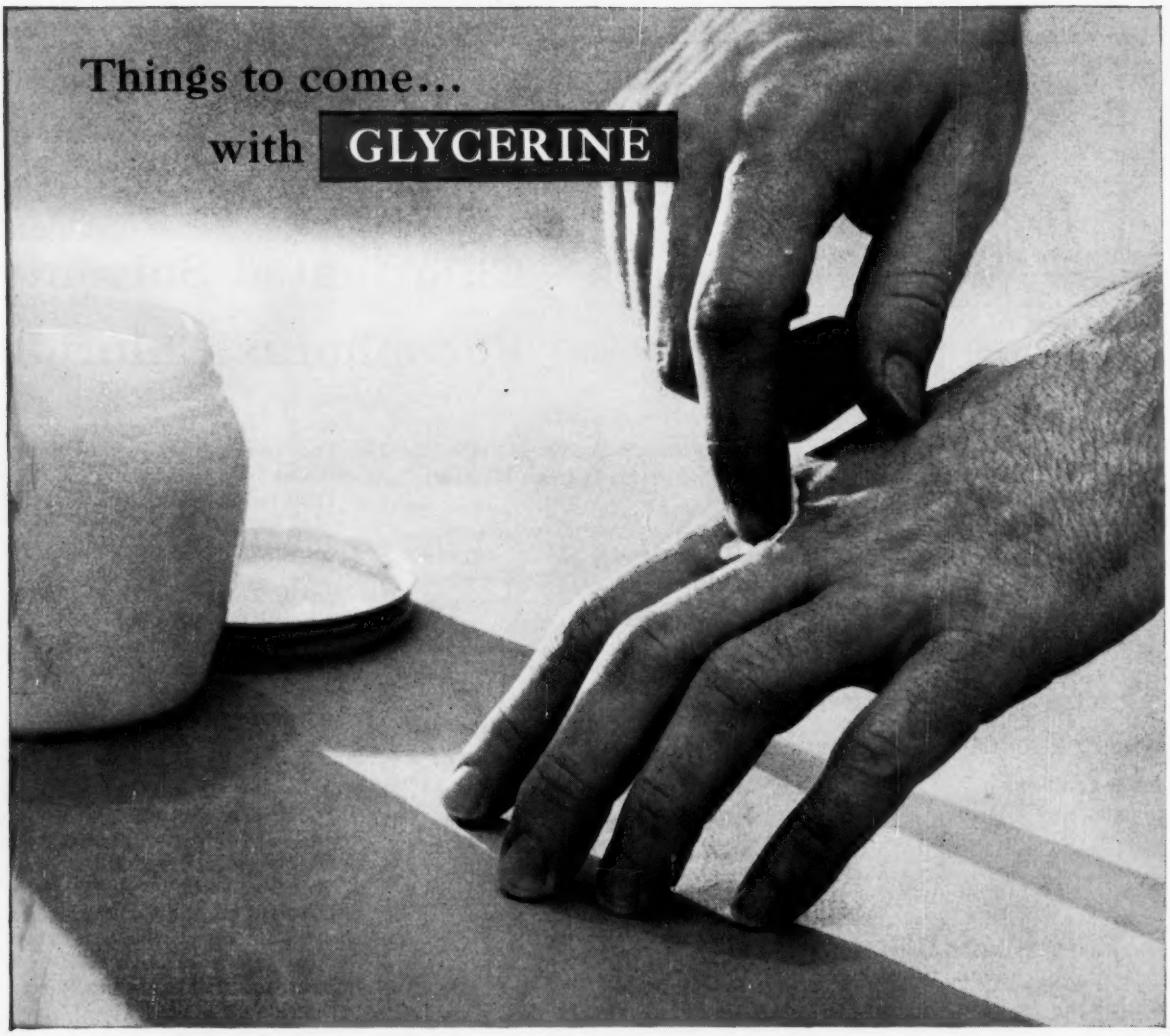

New skin fungicide with self-regulating action

A new fungicide* for skin infections, with Glycerine Triacetate as the active ingredient, duplicates on a small scale a completely self-regulating chemical process.

The fungicide works this way: Esterase, an enzyme present in skin, serum and in many fungi, hydrolyzes the triglyceride to glycerine and acetic acid—the chemical which actually inhibits the fungi. Accumulation of the acid, however, causes the pH to drop to a level which decreases esterase activity. This in turn slows up production of the acetic acid, keeping it well within physiological tolerance. As the acid is neutralized, the pH rises and the cycle starts again.

The new fungicide is expected to be marketed soon. Meanwhile, other triglycerides are under investigation as new chemotherapeutic agents.

Glycerine's usefulness continues to grow. Stable in price, dependable in supply, Glycerine offers processors a unique balance of properties: It is hygroscopic, nontoxic, stable, nonvolatile, with excellent solvent power and agreeable taste. New applications for Glycerine are extending its use in paints, foods, pharmaceuticals, packaging and many other fields. For a useful 20-page booklet, "Glycerine Properties and Uses," write to:

*Developed by Dr. S. G. Knight, University of Wisconsin

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West Coast Shift

As of this month, Emil J. Mikity is West Coast editor for CHEMICAL WEEK and CHEMICAL ENGINEERING. For the past several weeks, he's been learning the Western way of doing things from Elliot Schrier, who has left our staff to become associated with Arthur D. Little, Inc., in its West Coast office. Our best wishes go with Elliot in his new job.

"Mick," as we call Emil, came to us over a year ago with a strong background in chemical engineering. He proved his capabilities as assistant editor in Research, and we are pleased that we were able to promote him to his new assignment. He writes, "Everything is wonderful—the people, restaurants, weather; even the chemical industry seems to have a happier glow in the Bay area."

HOWARD C. E. JOHNSON
EDITOR-IN-CHIEF

What Is Asphalt?

TO THE EDITOR: Your article titled "Specialties Riding the Asphalt Road to Riches" (*May 4*) is most timely. It is an excellent review.

There are, however, two misconceptions . . . I wish to point out.

The petroleum industry is . . . exceedingly interested in finding asphalt additives that are true antistripping agents and that are heat-stable, and is waiting for such products. I believe test methods have not as yet shown just why some of these compounds should be used, and rule-of-thumb procedures of testing have led to confusion. As the oil industry has for many years used motor oil additives—a triumph of synthetic organic chemistry—and is highly cooperative, so it is again looking forward to something that will "work" in the case of asphalts and their wetting ability on aggregate. The many workers today dealing with asphalt antistripping products are to be congratulated for some fine chemical work going on in these laboratories.

The second misconception resides in the last paragraph of the article. Asphalt "now" is not a "left-over" in a refinery. Those asphalt refiners—and they are in the great majority who are in the business to make a material to pass state highway specifications or those of the Asphalt Institute—could hardly concoct in this day and age a "left-over" material and have it pass the specifications.

Moreover, asphalt made by practically all refiners who are legitimately in the asphalt business is; furthermore, a most uniform material, made by no secret process, but rather by standardized operation . . . ; this results in uniformity of the control tests on the product from hour to hour and day to day.

As to a "standardized asphalt" appearing some day—that could well be, and we look for that day to come. Being an engineering material, it will be standardized eventually to a degree found in other engineering products, such as concrete, steel, printing inks. Such standardized asphalts will be fitted to their uses in specific applications.

E. J. BARTH
Petroleum & Asphalt Consultant
New York

Debatable points, Reader Barth. Not all oil companies are eager to incorporate additives, and an Asphalt Institute publication says, "Most petroleum asphalt used in highway work is produced by merely distilling off the gasoline, kerosene and other oils that hold the asphalt in solution."—ED.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

Train Off Course?

TO THE EDITOR: With regard to the caption on the picture in the upper right corner, p. 85, May 25: I would suggest that any Union Pacific train is seriously off course pulling into Blind River, Ont. This train has further gotten itself into trouble by being pulled by a locomotive of the Canadian Pacific Railway. Did someone throw the wrong switch?

D. B. SHARPE
Javex Co. Ltd.
Toronto, Can.

Our caption writer threw the wrong brain cell.—ED.

MEETINGS

Institute of Paper Chemistry; theme: water-derived problems of the pulp and paper industry; Appleton, Wis., June 16-July 11.

Society of Nuclear Medicine, 4th annual meeting, Skirvin Hotel, Oklahoma City, June 20-23.

American Assn. of Cost Engineers, 1st annual meeting, University of New Hampshire, Durham, June 26-29.

British Plastics Exhibition and Convention, Olympia London Grand & National Halls, London, July 10-20.

Denver Research Institute, Metallurgy Division, 6th annual conference on industrial applications of X-ray analysis, Albany Hotel, Denver, Aug. 7-9.

American Soybean Assn. and National Soybean Processors Assn., annual meeting, Leamington Hotel, Minneapolis, Aug. 26-28.

Fisk University, 8th annual infrared spectroscopy institute, Nashville, Aug. 26-30.

Instrument Society of America, international symposium on gas chromatography, Kellogg Center for Continuing Education, East Lansing, Aug. 28-30.

National Agricultural Chemicals Assn., annual meeting, The Essex and Sussex, Spring Lake, N.J., Sept. 4-6.

Instrument Society of America, 12th annual instrument automation conference and exhibit, Cleveland Auditorium, Sept. 9-13.

Technical Assn. of the Pulp and Paper Industry, testing conference, Hotel Shoreham, Washington, Sept. 11-13.

International Union of Leather Chemists Societies, 5th conference, Rome, Italy, Sept. 15-20.

National Bureau of Standards, free-radicals symposium, Washington, Sept. 18-20.

Drug, Chemical and Allied Trades Section of the N.Y. Board of Trade, 67th annual meeting, Galen Hall, Wernersville, Pa., Sept. 19-21.

American Oil Chemists' Society, fall meeting, Netherland Hilton Hotel, Cincinnati, Sept. 30-Oct. 2.

Photo of nitric acid plant courtesy of Allied Chemical and Dye Corp., Nitrogen Div. Daily capacity in excess of 250 tons.

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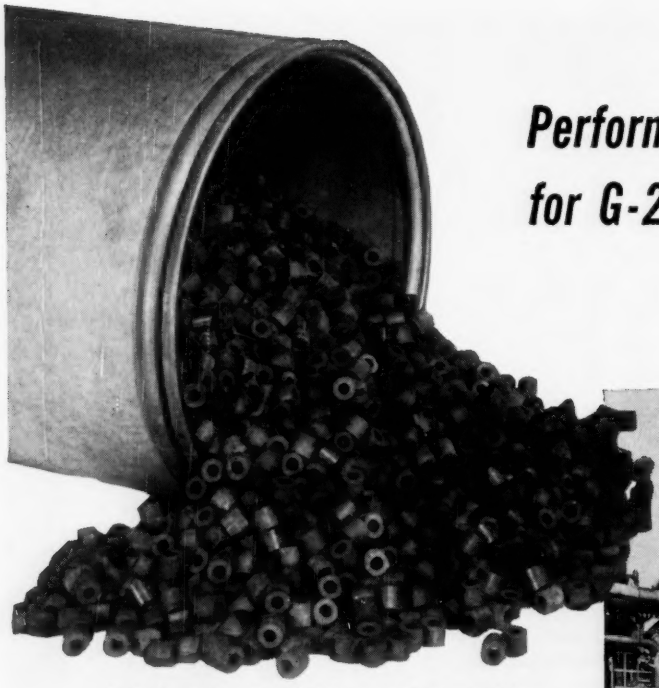
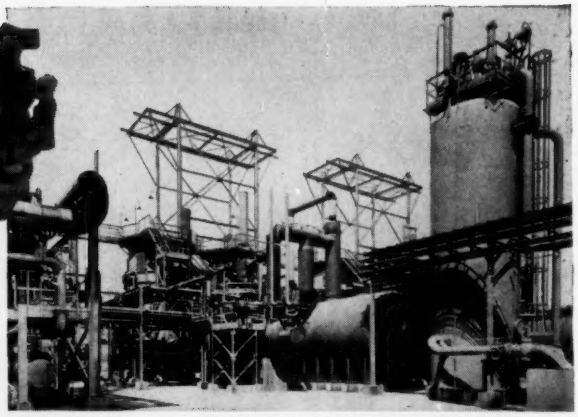
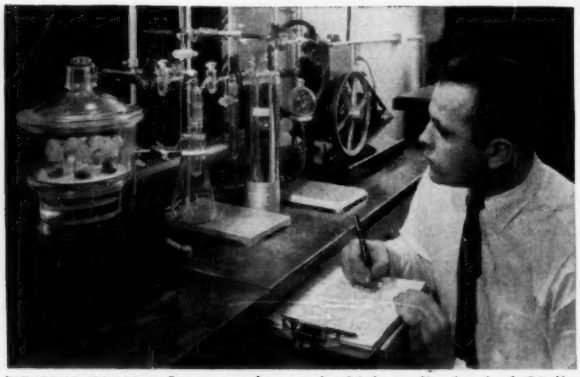
Performance exceeds claims for G-29 steam-hydrocarbon reforming catalyst



THIS IS G-29. A nickel base catalyst containing approximately 27% nickel. For reforming of hydrocarbons at temperatures of 1100°F to 1850°F in production of ammonia and methanol synthesis gases, hydrogen, OXO synthesis gases, controlled atmospheres, carrier or utility send-out gases.



USED IN ADAMS TERMINAL AMMONIA PLANT of Phillips Chemical Company. Girdler catalyst specialists studied the production of ammonia synthesis gas in secondary reformers. Cooperating with Girdler, the Phillips Chemical Company ran pilot plant tests and selected G-29 catalysts for this application. Results: Catalyst performance exceeds Girdler claims. *Methane in reformer effluent is less than 0.1 mol percent at normal operation.*



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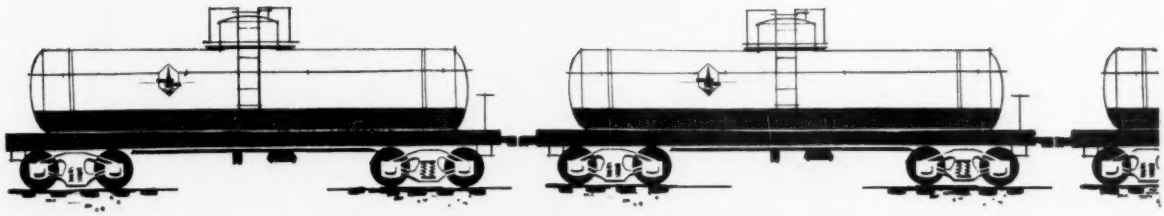

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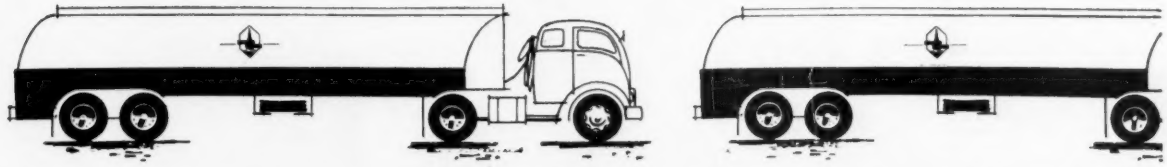

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In the 1957 Chemical Engineering Inventory Issue all the events of this big year in the *chemical process industries are tied up in one powerful selling package. The three big sections include: Inventory of Chemical Engineering Awards; 26th Exposition and Chem Show; Inventory of Plants, Chemicals, Equipment. Each one is a potent sales tool in the CPI . . . now we're putting them all together, bringing them out at the height of your hottest selling season. It's an advertising opportunity you simply can't afford to miss. *Check these bonus benefits against your own sales objectives!*

26th Exposition and Chem Show

- ☐ Chemical Engineering's circulation (44,000 for this issue) closely parallels the Chem Show attendance.
- ☐ The Chem Show section of the 1957 Inventory Issue includes the listings from the actual program being distributed at the Show . . . plus maps of booth locations.
- ☐ Exhibitors who advertise anywhere in this issue get their names printed in boldface in the program listings, plus ½-inch space to print a short message.
- ☐ Readers of the Chem Show listings in the issue are referred to your ad for complete details.
- ☐ The program distributed at the show itself will reflect the same type (boldface listings, etc.) and will refer an estimated 60,000 visitors to your ad in CE's 1957 Inventory Issue for further information.
- ☐ The 44,000 circulation of the issue plus 60,000 distribution of the program at the show means a total exposure of 104,000 who will be referred to your ad.
- ☐ Low-cost insurance . . . protect your investment in booth, display and manpower by giving prospects full details on your exhibit, so they can schedule their itinerary accordingly.

Inventory of Plants, Chemicals, Equipment

- ☐ Chemical Engineering's annual Inventory of Plants, Chemicals and Equipment is a unique service, providing the reader with information available nowhere else in the industry.
- ☐ 12-month life . . . Research shows that buyers keep the Inventory at hand all year, use it whenever they need information about raw materials, equipment, technical literature.
- ☐ Your ad will appear in the appropriate section so readers will see it whenever they are interested in your type of product.
- ☐ Psychological timing . . . when buyers see your ad in this issue, they are actively looking for information about new developments in the industry.
- ☐ 12-month reader service, too. Ads in the Inventory Issue are proven inquiry pullers every month of the year. The last three issues averaged 75,000 high-quality inquiries apiece.

Inventory of Chemical Engineering Awards

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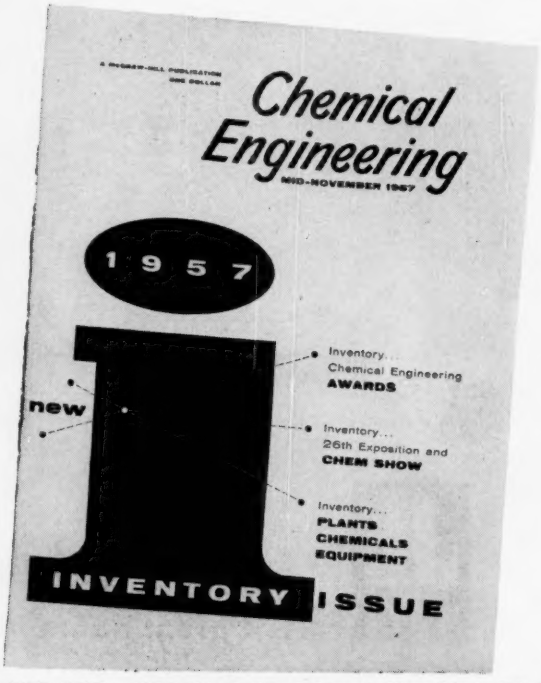

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Chemical Week
June 22, 1957—Vol. 80, No. 25

A Management View— NO

'The wage-productivity relationship furnishes neither a rational nor a workable basis for establishment of wage rates. Linking wages to productivity on a plant-by-plant basis, or even industry-by-industry, would be an economic absurdity.'
—George Hagedorn, National Assn. of Mfrs.

A Labor Union View— YES

'To a substantial extent, wage increases in these industries should be based on long-term productivity increases in the total economy. In practice, this principle is modified by the productivity health of a particular industry or plant.'
—Jack Knight, OCAW.

Link Wages to Productivity?

THE BOLD and opposing positions voiced by Messrs. Hagedorn and Knight underscore a paradox. Most chemical management men are against, and most labor leaders are for, the linking of wage increases to productivity increases—even though such a plan, for the present at least, would tend to keep wages down.

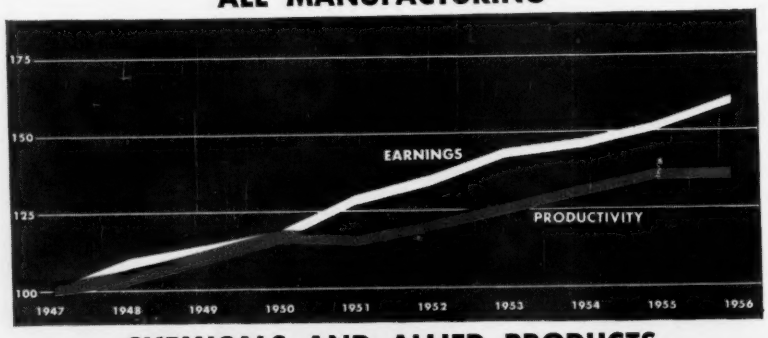
Figures compiled by *CW* indicate that in most process industry groups, wages have been rising by annual increments averaging nearly 20% greater than the corresponding gains in productivity (*see charts, pp. 32-33*). In all manufacturing industries as a whole, however, the gaps have been even wider.

Meanwhile prices of chemical products have been rising at a much more moderate rate (*see chart, p. 34*). (Presumably, the price rise would have had to be much steeper if there hadn't been the big gain in productivity.) Relatively stable prices, accompanied by increasing costs of production (including labor costs), have been cited as a major reason for the roughly 5-6% downturn in chemical company profits during the first three months of this year (*CW, May 4, p. 21*).

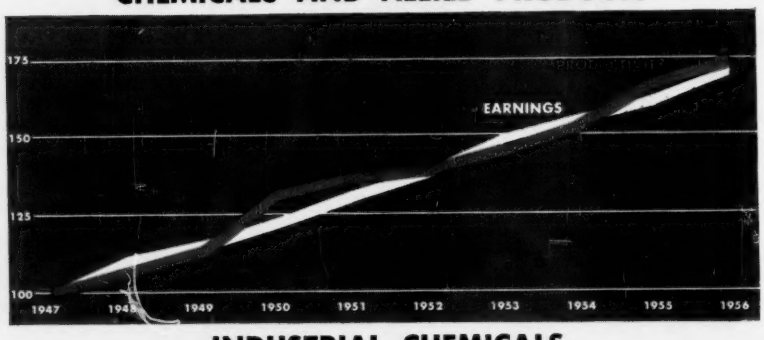
Strict application of a formula for limiting chemical wage hikes to total-economy productivity gains would have meant a rise of only 26% in this industry's wage

Wages vs.

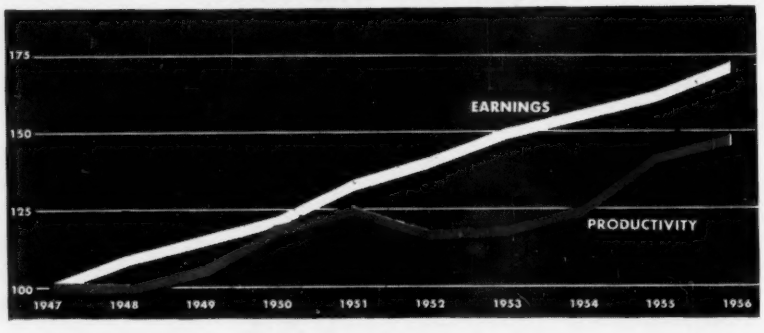
1. Over-all, wages are rising faster than productivity in U.S. manufacturing



2. In "chemicals and allied products," they have been more or less in step



3. But in "industrial chemicals," productivity hasn't kept up with wages



costs over the postwar decade, instead of the 71% actual increase.

This whole subject flared up in the public view early this year when President Eisenhower—in his State-of-the-Union Message—warned that wage increases "must be reasonably related to improvements in productivity" if they were not to be inflationary.

Since then, there's been a flurry of charges and countercharges between spokesmen for management concerning productivity, wages and prices: what it all means; and who's to be held responsible for any inflation that develops.

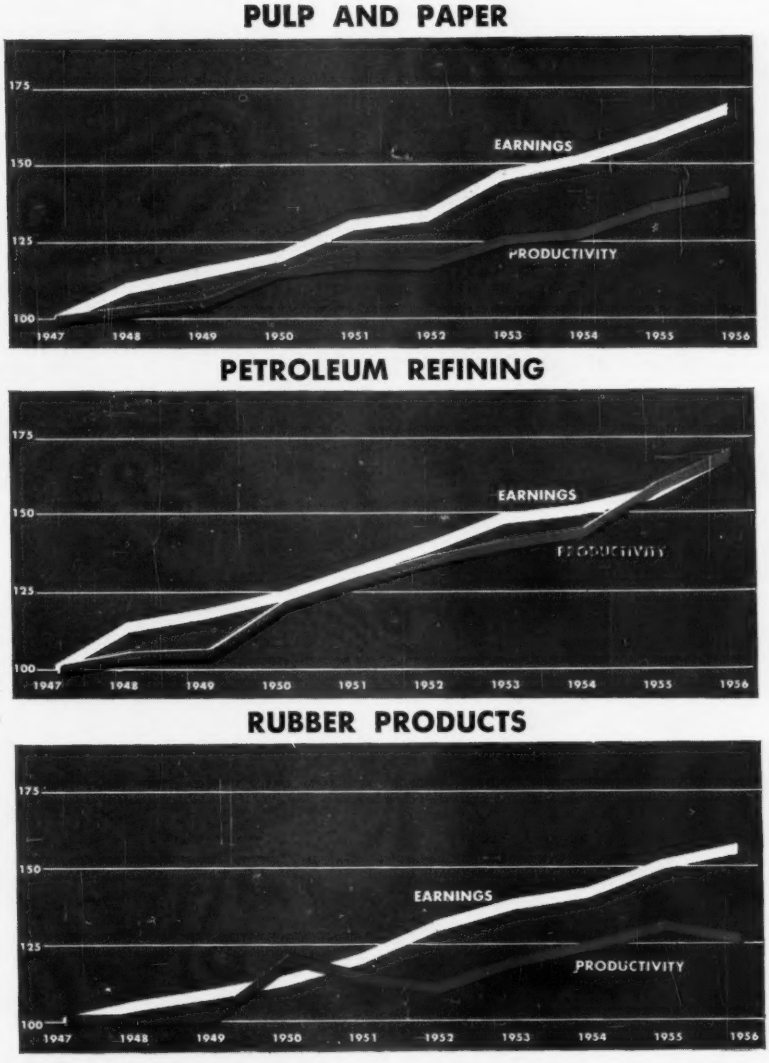
Clash of Ideas: Noted economists can't agree on what the current productivity-wage-price relationship is, much less what it should be (*see p. 36*). So it's not surprising that there are varying views on this same subject within the ranks of process industry management. Diverse opinions crop out on whether productivity records can be computed at all, how they should be derived and how used.

CW's survey discloses that most of the largest chemical companies don't try to keep elaborate statistics on productivity within their own organizations. Reasons cited: too many products involved, including many items that are valuable by-products of integrated plant operations; too much year-to-year change in type, grade, concentration and proportion of products; too much variation in plants, processes and production schedules.

But, a number of sizable chemical producers do compute productivity data in one form or another. The widely divergent figures they report point up the

Productivity

4. ...And that's true, too, of other chemical process industries



PRODUCTIVITY INDEX: Index of physical output (Federal Reserve Board) divided by index of man-hours worked (based on employment and hours-worked figures reported by U.S. Bureau of Labor Statistics).

EARNINGS INDEX: Based on average hourly earnings (annual averages reported by U.S. Bureau of Labor Statistics).

In each case, 1947 values taken as 100.

fact that the industry-wide productivity averages reckoned from government statistics are virtually meaningless for individual companies and plants.

Figures and Formulas: Among the surveyed companies that compute internal productivity averages, there's wide variance both in the trends of productivity and wages and in the methods used for determining productivity. In part, at least, this is because productivity-earnings figures reflect the different operating conditions of different companies.

One large diversified chemical company, for example, reports that its employees' average productivity rose by some 42% over the past decade while average plant-worker earnings nearly doubled. (Average annual increases: productivity 4%, earnings 7.5%.) Another large and diversified chemical concern, on the other hand, says that productivity climbed by 158% and production workers' average hourly earnings by 77% during the same 10-year period.

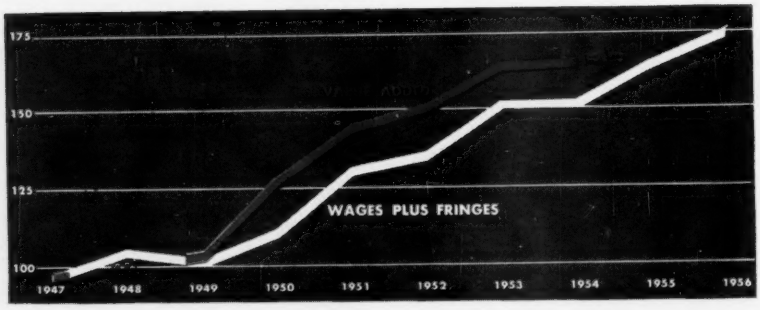
But these two sets of figures can hardly be mentioned in the same breath, let alone compared. While both of these companies carried out major expansion programs over that postwar decade, the former (*a*) concentrated on the same principal products throughout the 10 years and (*b*) computed productivity as physical output per man-hour; whereas the latter company (*a*) began producing a number of new and relatively higher-priced products during the period and (*b*) got its productivity figures by dividing annual sales totals by man-hours worked.

Spread from National Norms: Because such differences are the rule rather than the exception, it's risky to

Rising Chemical Labor Costs:
THREE COMPARISONS

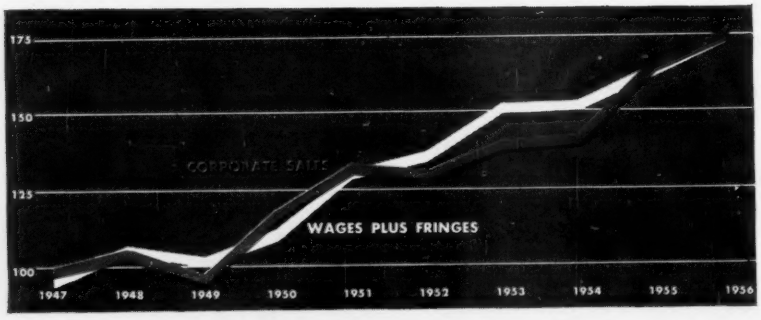
1. Value added by manufacture has kept pace

"Value added by manufacture" taken from Census of Manufactures figures.



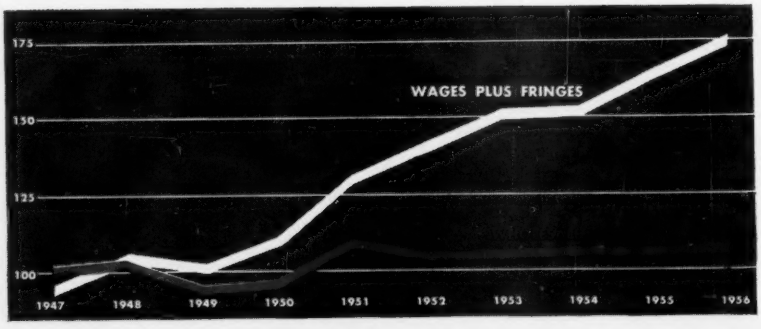
2. Total chemical sales also have kept up

Corporate sales data reported by Federal Reserve Board.



3. Chemical prices are falling badly behind

Wholesale price index reported by Federal Reserve Board.



Selected indexes for "chemicals and allied products." In each case, 1947-49 average equals 100. Wages based on hourly paid employees' earnings (as reported by U.S. Bureau of Labor Statistics) and fringe benefits based on surveys by U.S. Chamber of Commerce.

assume that any one company's productivity pattern coincides with the national average for its particular industrial category. On the basis of Federal Reserve Board production figures (based to some extent on FRB estimates of increasing productivity), the 1947-56 average productivity rise in "industrial chemicals" has been about 47% (*see chart, p. 32*).

But among five companies in this category that keep productivity data, only two report productivity gains anywhere near that figure: one listed a 43%

WAGES VEERING UP—At Varying Velocities

Average hourly earnings in 16 process industry categories.
Source: U. S. Bureau of Labor Statistics.

Industrial category	'47	'48	'49	'50	'51	'52	'53	'54	'55	'56	'57 (est.)
Products of petroleum and coal	$1.50	$1.70	$1.79	$1.83	$1.98	$2.09	$2.21	$2.27	$2.36	$2.54	$2.65
Synthetic rubbers	1.43	1.58	1.68	1.76	1.91	2.00	2.15	2.23	2.34	2.50	2.58
Primary aluminum refining	1.31	1.42	1.50	1.56	1.71	1.82	2.02	2.10	2.20	2.36	2.50
Industrial inorganic chemicals	1.38	1.52	1.57	1.66	1.80	1.88	2.01	2.11	2.20	2.32	2.39
Primary plastics and resins	1.30	1.42	1.49	1.57	1.73	1.83	1.95	2.00	2.09	2.23	2.33
Electrometallurgical products	..	..	..	..	1.79	1.85	1.96	1.99	2.11	2.20	2.28
Soaps, cleaning and polishing compounds	..	..	..	..	1.70	1.79	1.90	1.99	2.08	2.18	2.27
Compressed and liquefied gases	..	..	..	..	1.70	1.76	1.90	1.96	2.04	2.14	2.26
Explosives	..	..	..	..	1.69	1.77	1.89	1.96	2.03	2.15	2.25
Rubber products	1.39	1.46	1.51	1.58	1.69	1.83	1.93	1.97	2.10	2.17	2.23
Paints, pigments and fillers	1.26	1.38	1.46	1.53	1.64	1.72	1.82	1.89	1.99	2.08	2.17
Synthetic fibers	1.24	1.34	1.43	1.49	1.59	1.67	1.76	1.82	1.87	1.95	2.03
Stone, clay, glass and refractory products	1.19	1.31	1.37	1.44	1.54	1.61	1.72	1.77	1.85	1.95	2.02
Drugs and medicines	1.18	1.32	1.40	1.46	1.52	1.59	1.68	1.76	1.84	1.93	2.02
Pulp, paper and allied products	1.17	1.29	1.34	1.41	1.52	1.61	1.69	1.75	1.83	1.94	2.02
Fertilizers	0.94	1.02	1.08	1.14	1.24	1.32	1.40	1.45	1.50	1.61	1.66

rise; the other, 42%. Increases for the other three producers of industrial chemicals included the previously mentioned high of 158% and two much lower figures: one of "25-30%," the other of 30.5%.

The company that reported a 43% productivity rise (based on output of one principal product) stated that its plant workers' average hourly earnings over the same period increased 49%. The firm whose productivity gain was in the 25-30% range said that its wage costs rose more than 50%. An unidentified chemical company cited a 55% rise in productivity and a 39% climb in plant-worker pay, but for an eight-year period (1949-56) rather than for the past decade.

The only other specific figures reported in this survey came from a company with strength in paints and pigments as well as other process lines: a 33% gain in productivity and a 70% hike in wage payments. (With the possible exception of the unidentified chemical concern, all the above figures are from large or medium-size multiplant chemical corporations).

Problems of Computing: Most of the firms that do keep intracompany productivity records report that they don't adhere to methods used by the economists (*see p. 36.*). Instead, they use unit production cost and other control figures that are more useful in determining the effect of investments in new plants and equipment.

The largest chemical companies are particularly disinclined to put in any time and effort on individual productivity data. They contend that—for them, at least—such averages are almost impossible to compute and would have little or no meaning in any case.

One industrial relations vice-president declares that productivity figures would be meaningless even for a single plant—especially a big plant turning out hundreds of chemical products simultaneously. He notes that his company does make occasional productivity studies at plants making only a few products, but explained that here the main purpose was to check on supervisory efficiency in utilization of machinery and manpower.

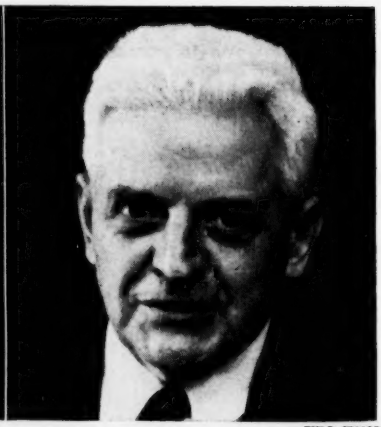
'Semantic Trap': An economist for another major chemical producer vehemently attacks the very use of the term "productivity increase" as "a semantic trap that leads the reader to credit the working man with having improved his efficiency." He emphasizes that his company has increased its capital facilities about twice as fast as its number of employees in postwar years, and declares:

"We cannot too often remind ourselves and the public that it is research, entrepreneurial skill and improved tools that bring society the benefits of greater production."

Still another leading chemical concern points up the difficulty of obtaining productivity data for various product lines. "Whether you start with averages at the company-wide level or for separate plants," says a spokesman, "eventually you get down to talking about individual products. Then your troubles really multiply. From an accounting standpoint, it is practically impossible to accurately apportion to particular products the indirect man-hours involved in labor for power production, maintenance, plant transportation, plant instrument development, etc., especially in cases where there is joint manufacture or a large chemical complex. Likewise, direct-labor or production-worker allocations must be scrutinized to discover any changes in labor classifications."

Productivity as a Wage Factor: By and large, process

LEON KEYSERLING, Committee on Economic Progress: Wages have not been keeping up with productivity.



WIDE WORLD

SUMNER SLICHTER, Harvard: Rising labor costs are inflationary, but this is better than a depression.

management tends to agree with the position of George Hagedorn, associate director of research for the National Assn. of Manufacturers, who holds that any close and rigid linkage of wages to productivity within an individual company is all wrong (*p. 31*).

However, some of the companies surveyed indicated that they do take their own productivity records into consideration in determining wage adjustments. No company admitted using productivity as the major factor in wage determinations, but three large concerns rated productivity as "one of several factors of approximately equal importance." Two other multiplant companies said they used productivity as "a minor factor."

Where Unions Differ: On the other side of the fence, chemical labor unions take a somewhat different stand on the question of productivity and wages. There's agreement that wages should not be too closely and rigidly tied to productivity—and particularly to productivity within any given company or plant—but union leaders stress what they call the "social significance" of productivity increases.

This is especially true of the two AFL-CIO unions in the chemical industry, International Chemical Workers and Oil, Chemical & Atomic Workers. In brief, they assert that part of any saving in man-hours should go into higher wages; and—although they try to keep track of productivity trends within the process industries as best they can—their arguments on this point go back mainly to increases in the national all-manufacturing productivity average.

In basing wage claims on the all-manufacturing productivity trend, OCAW's president, O. A. (Jack) Knight, contends, "We are removing a major point of argument for our side, because productivity increases in oil and chemicals far exceed those of the general economy."

Sympathetic Bargaining: Nevertheless, Knight continues, the productivity health of a particular industry—and often of a particular plant—influences wages upward or downward from what would be justified in the total economy. "It naturally is easier to obtain concessions from an industry with rapidly increasing productivity than from an industry in the doldrums.

"Conversely," Knight says, "an industry with poor productivity resists wage increases and—recognizing the problem—the union bargains less aggressively. Going a step further, the union always tends to bargain less aggressively in a plant that is obsolete."

A. D. Lewis, president of District 50, United Mine Workers, sets forth as an article of UMW faith the principle that labor's goals—higher wages, shorter hours, and better working conditions—"depend to a considerable degree upon increasing productivity and competitive prices." Thus, District 50 is all in favor of new and better equipment and processes in chemical plants, anticipating that higher wages are thereby made possible. But Lewis rejects any direct tie-in between wages and productivity: "In our view, collective bargaining should be as free from being controlled by formulas as from [being controlled by] government. The opportunity is thus provided for workers and their employers to prosper and share equitably in the increased productive capacity of industry."

As a tool for economists, worker productivity—where it can be calculated without too gross an element of uncertainty—no doubt has its uses. But in the process industries, as one chemical executive suggests, possibly the most meaningful and readily obtained measure of "corporate productivity" is simply earnings/share—a precise figure understood by shareholders, management and unions alike.

EWAN CLAGUE, U.S. Labor Dept.: From 1947 to '56, productivity rose 26%, real earning 33%, prices 29%.

GABRIEL HAUGE, White House staff: Wage increases are beneficial, if they don't outrun productivity.

WIDE WORLD

WIDE WORLD

MEDICAL EXAMS become standard practice while industry is . . .

Readying a Flu Vaccine

Six American pharmaceutical firms last week reported the development of a vaccine effective against the Asian influenza now sweeping Far Eastern areas.

The news comes two weeks after samples of the virus were made available to researchers by the U. S. Public Health Service.

Variously termed Asian flu, Indian flu, Far East flu, the influenza has been raging in Japan, India, the Philippines, and other Far Eastern countries for weeks. With the arrival in San Francisco recently of a shipload of passengers suffering from the disease and also because U. S. armed forces are stationed in affected countries development of an effective vaccine has become a problem of immediacy in this country.

Not American: The Asian flu is a different strain than those normally found in U. S. patients. Vaccines developed to fight strains prevalent here are not effective against the Asian viruses that are causing the current outbreak. These types have been formally named Japan 305-57, Japan 307-57, Wrair 1153 (Philippines), and Hong Kong 304-57.

The six companies that report success are Parke, Davis, Eli Lilly, Pittman-Moore, Lederle, National Drug and Merck. They are the only U. S. companies now licensed to manufacture flu vaccine. Their reports were made before the National Institute of Health's Division of Biologic Standards.

The reports indicate that U. S. makers would be able to produce such a vaccine in commercial quantities by October.

Biggest hitch at the moment, according to reports, is the slow-growing nature of the virus when cultured in a chick embryo. This presents the problem of finding a higher-yield growth medium. As far as actual production is concerned, present feeling is that existing production equipment will be able to handle the job.

Both Parke, Davis and Lilly estimate the time lag between start of production and public availability at something between 40 and 90 days depending on the testing requirements set by the government, and the supply of fertile eggs on which to grow the virus.

Demand High: Already the U. S. Army has asked for 4 million c.c.'s of the new vaccine—as soon as it's available. The additional requirements for public health use could squeeze production facilities if the spread of flu in this country reaches epidemic proportions. USPHS feels that the occurrence of such an epidemic is highly uncertain.

In all probability the new vaccine will be monovalent, that is, it will contain a combatant for only one strain of the virus. Present flu deterrents, on the other hand, are generally polyvalent, and usually contain combatants for at least three strains.

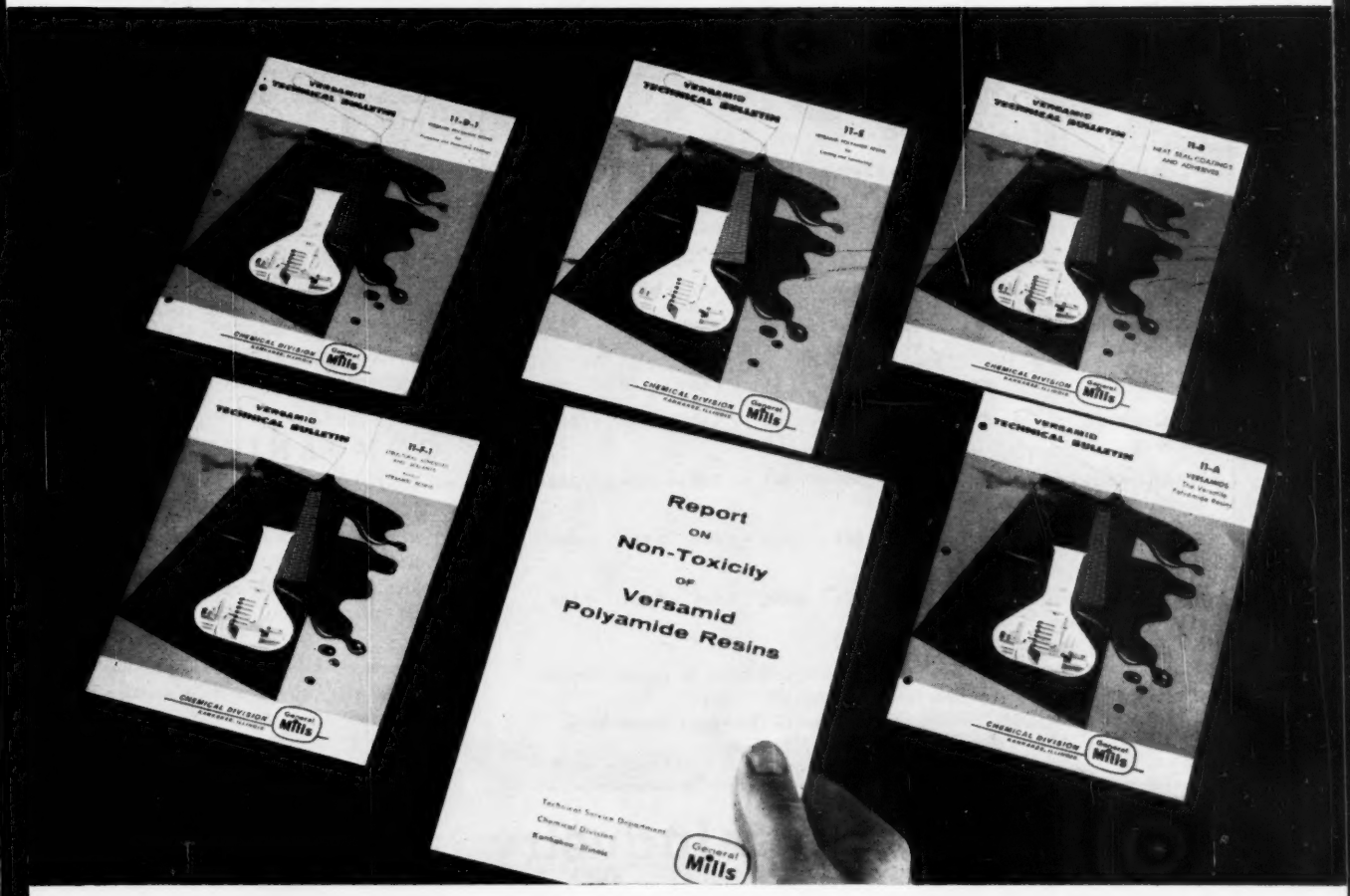
Price Question: Lederle Laboratories says the new vaccine will probably be priced similarly to older ones, in the range of $1.20-$1.50 per 1 c.c. of inoculation. Some observers think that the demands of the U. S. armed forces, the U. S. public, and foreign nations could generate a wide and lucrative market.

As to the danger of an epidemic developing soon in this country, most experts are hesitant to generalize. Influenza itself does not warrant quarantine precautions, and the difficulties of pinning down carriers of the disease are legion. At present, USPHS is taking the precaution of recording the movements of persons returning from the Orient. State and local health authorities, with whom responsibility for protection rests, are being notified of the city-to-city movements of these travelers.

Moreover, several states have begun taking precautions for control if flu should break out. On the West Coast, for example, Dr. Edgar Norris, who heads up the U. S. Quarantine station in San Francisco, reports that his checks show that "no secondary flu cases have been observed" there. In New York State, Gov. Harriman has authorized the state health department to start a pilot project to produce vaccine.

Reports arriving from affected nations in the Far East indicate that although the incidence of the flu is high, the mortality rates in nations where the epidemic has broken out are low. Health officials in this country are optimistic that control measures to prevent spreading will be ready in time.

Get the facts about...



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DESCRIPTION	USE	PACKAGING
Thermosetting types (100 series)—fluid	Protective Coatings, Potting and Casting, Laminates, Adhesives	Drums (S.T.C.) 14 and 55 gallons 100 lbs. and 400 lbs. net
Thermoplastic types (900 series)—solid	Paper Coatings, Heat Seal Adhesives, Thixotropic Paint, Printing Inks	Drums fiber, 200 lbs. net 50 lb. Multi-Wall Paper Bags
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U. S. Chemical Processors Keep on Building*

New Plant and Equipment Expenditures†

(million dollars)

	1956				1957		
	Jan.-March	April-June	July-Sept.	Oct.-Dec.	Jan.-March	April-June	July-Sept.
Chemicals and Allied	$283	364	370	438	353	444	472
Paper	155	203	206	237	192	228	209
Petroleum and Coal	627	803	813	892	728	976	913
Rubber	40	50	50	61	46	49	51
Nonferrous Metals	69	88	103	152	147	212	268
Stone, Clay, Glass	132	172	181	201	135	164	156
Total Process Industries	1,306	1,678	2,123	1,981	1,701	2,073	2,069
Total Manufacturing	2,958	3,734	3,834	4,428	3,505	4,421	4,189

*Exclusive of agricultural business and outlays charged to current account.
†Estimates from data reported in April May '57.
Source: U. S. Dept. of Commerce; Securities & Exchange Commission.

Outspending Other Industry

A survey made by the U.S. Dept. of Commerce and the Securities & Exchange Commission, released last week, shows that the chemical and allied process industries propose to spend $102 million more in the third quarter of this year than they did in the same period in '56.

This is a jump of 28%—triple the rate of gain expected by U.S. industry as a whole. For all industries, the increase is $721 million, about 8%.

Other Segments: Petroleum companies also exceed the national expansion rate. Petroleum firms intend to increase plant and equipment expenditures some $100 million (12%) over those a year ago.

While chemicals and petroleum continue to maintain fast expansion rates, the performance of industry as a whole shows a marked slowing up.

A year ago, U. S. industry was increasing its investment in new plants and equipment at a rate of $1.5 billion per quarter. This year, the rate of gain is down to about a half-billion dollars per quarter.

The new survey shows industry intends to spend at an annual rate of $37.89 billion in the third quarter, which would push the first nine months of 1957 some 9% above the same period last year.

An Improvement: In itself, this is an improvement over a like survey taken three months earlier. At that time, businessmen reported they would increase investment in '57 by only 6.5% over '56.

Surveys taken by the McGraw-Hill Dept. of Economics, which used a slightly different sample and therefore cannot be directly compared with the Commerce-SEC findings, point to a hefty increase of 12% for the year as a whole.

All this points to a new record high for investment this year. But economists are eyeing the slowed-down rate of gain as much as they are the totals. With investment running at an annual rate of $37.89 billion a half-billion gain per quarter isn't as impressive as it would have been a few years ago.

EXPANSION

Catechol: Heyden Newport Chemical Corp. will build a new plant in Pensacola, Fla., to produce 500,000 lbs./year of methyl isopropyl catechol. The new unit is slated for completion by Oct. '57.

•

Titanium: Allied-Kennecott Titanium Corp. will build a $40-million titanium plant (*CW, Dec. 22, '56*) near Wilmington, N.C., where it has purchased a 1,500-acre plant site on the Cape Fear River. Construction will get under way this summer on the reportedly 8,000-tons/year unit. Completion date: early 1959.

COMPANIES

U. S. Rubber Co. has purchased a 48.2% interest in Englebert & Co., European tire manufacturer. Terms called for Englebert to receive 101,777 shares of U. S. Rubber common, plus $1.6 million in cash.

•

Spencer Kellogg & Sons Inc. directors have approved a plan to merge Beacon Milling Co. Inc. (Cayuga, N.Y.) into the firm. Spencer Kellogg stockholders will be asked to approve the merger at a special meeting in Buffalo next week.

•

Kaiser Aluminum & Chemical Corp. will sell 300,000 shares of $100 convertible preference stock through a public offering. Underwriters will be an investment banking group headed by The First Boston Corp. and Dean Witter & Co. Proceeds will help finance Kaiser's current expansion program.

FOREIGN

Ilmenite/Ceylon: The government of Ceylon has appropriated $13 million for new industries, including development of ilmenite sands on the country's east coast ($2 million), expansion of the salt industry ($2 million). Also in the works: an acetic acid unit, an alcohol plant and a graphite recovery plant.

•

Aluminum/Australia: A $1-billion plan is shaping up to turn Australia into a major aluminum producer. Consolidated Zinc Pty. Ltd. will buy the Australian government's share of New Guinea Resources Prospecting Co. Ltd.

1.

PFIZERIDDLES

2.

1. How to make the minerals added to vitamin tablets more digestible? Pharmaceutical manufacturers find the use of Pfizer Gluconates and Citrates as mineral carriers greatly reduces gastro-intestinal disturbance from these products.

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...sells more than 100 organic chemicals for food, medicinal and industrial uses.

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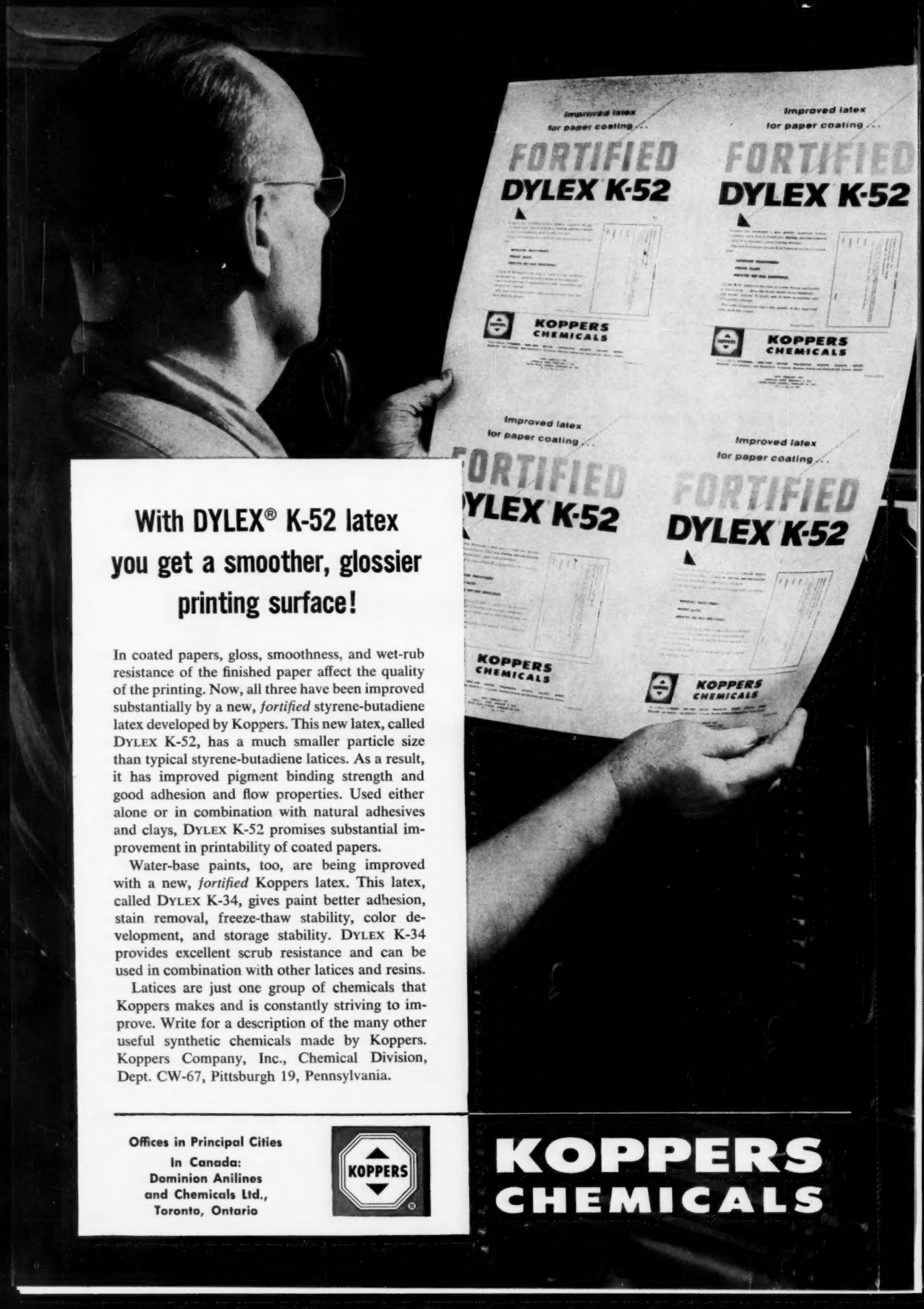
CITRIC, TARTARIC, OXALIC ACIDS AND SALTS • ASCORBIC ACID • CAFFEINE • VITAMINS • ANTIBIOTICS • PLASTICIZERS



With DYLEX® K-52 latex you get a smoother, glossier printing surface!

In coated papers, gloss, smoothness, and wet-rub resistance of the finished paper affect the quality of the printing. Now, all three have been improved substantially by a new, *fortified* styrene-butadiene latex developed by Koppers. This new latex, called DYLEX K-52, has a much smaller particle size than typical styrene-butadiene latices. As a result, it has improved pigment binding strength and good adhesion and flow properties. Used either alone or in combination with natural adhesives and clays, DYLEX K-52 promises substantial improvement in printability of coated papers.

Water-base paints, too, are being improved with a new, *fortified* Koppers latex. This latex, called DYLEX K-34, gives paint better adhesion, stain removal, freeze-thaw stability, color development, and storage stability. DYLEX K-34 provides excellent scrub resistance and can be used in combination with other latices and resins.

Latices are just one group of chemicals that Koppers makes and is constantly striving to improve. Write for a description of the many other useful synthetic chemicals made by Koppers. Koppers Company, Inc., Chemical Division, Dept. CW-67, Pittsburgh 19, Pennsylvania.

Offices in Principal Cities
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KOPPERS®

KOPPERS CHEMICALS

Washington
Newsletter

CHEMICAL WEEK
June 22, 1957

Direct Congressional supervision of atomic power development is in the offing. Legislation is almost certain to be passed at this session of Congress that would give the Joint Congressional Committee on Atomic Energy control over some of the Atomic Energy Commission's important purse strings.

AEC's relations with industry would be affected. This would naturally follow from the new situation in which the commission would, in effect, have critical congressmen looking over its shoulders every time it negotiates an agreement that involves government money.

Guaranteed uranium fuel and by-product prices and waivers of fuel charges are examples of the sort of thing that the joint committee would be given the right to review—and, for practical purposes, veto—under the proposed new piece of legislation. The same goes for AEC's program that guarantees price terms to industry. There have been frequent charges from critical congressmen that AEC has paid concealed subsidies to industry by waiving charges for fuel or granting price guarantees for unnecessarily long periods. In some cases, they say, AEC has okayed payment of overly generous prices for reactor by-products.

New reactor construction projects also would be scrutinized by the joint committee, whenever AEC is involved. The bill spells out the types of reactors—electric power, process heat, and propulsion—for which AEC must obtain specific committee clearance, no matter whether it builds a reactor alone or in cooperation with industry.

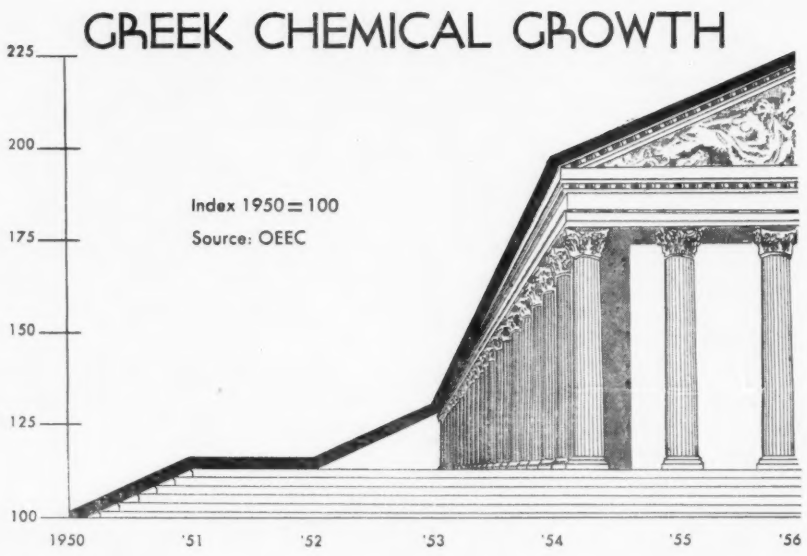
Politics is very much involved in this new approach to AEC spending. Congressional Democrats feel that AEC under Lewis Strauss has been entirely too free-wheeling. The bill would make AEC just like any other spending agency of government. Not only would AEC have to come to Congress for appropriations for specific projects, but it also would have to obtain advance authorization for spending the money.

More than that, it would give the Democratic majority on the committee a chance to force into authorization bills a program of federal power reactors. Strauss successfully fought off such a federal reactor proposal last year (and powerful House Democrats in turn blocked legislation he wanted—federal indemnification of up to $500 million per accident for privately owned reactors).

AEC will acquiesce, although it's not happy about the situation. Democrats in Congress hold the whip hand, however, and acquiescing is one way to get enacted into law the indemnification bill that everyone agrees is necessary in order to speed the civilian reactor program. You can look for this measure to pass this session—as soon as the bill giving the joint committee power to supervise AEC spending is signed into law.

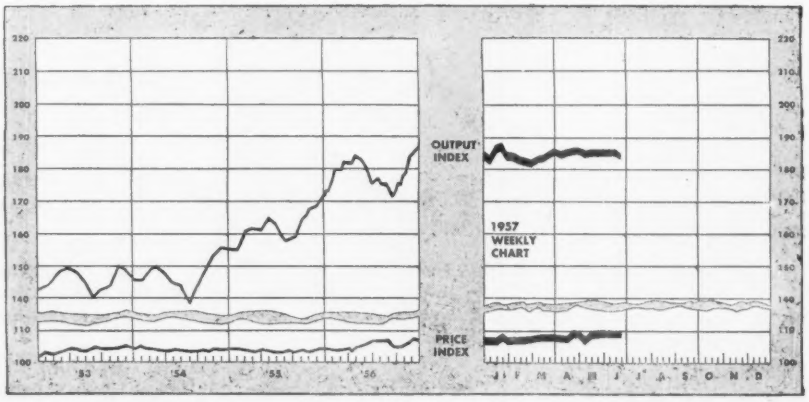
Charting Business

CHEMICAL WEEK
June 22, 1957



Smallest in Europe but Growing Fast

THE Greek chemical industry, smallest in Europe, has enjoyed one of the fastest growth rates. Since 1950, chemical output has jumped 125%, and the future looks equally bright. Reason: a $3-million expansion investment in the industry in '55. With chemical output now valued at about $7 million/year, Greece appears to be well on the way to becoming chemically self-sufficient.



Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	184.0	184.8	177.2
Chemical Week wholesale price index (1947=100)	110.0	110.0	105.6
Stock price index of 13 chemical companies (Standard & Poor's Corp.)	45.82	44.82	47.48

MONTHLY Employment (thousands)	Month Latest	Week Preceding	Ago Year
All manufacturing	12,918	13,042	13,114
Nondurable goods	5,346	5,402	5,440
Chemicals and allied products	555.9	557.1	569.0

ADVERTISEMENT—*This entire page is a paid advertisement* *Prepared by U. S. Industrial Chemicals Co.*

U.S.I. CHEMICAL NEWS

June 22 ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1957

Variety of Plastics Helps New Pump Lick Corrosion

Except for its drive motor, a new pump designed for electroplating and chemical service is made entirely of plastics. Six distinct kinds of plastic materials are used in its various components.

The pump body is made of polyethylene, the impeller of Hypalon. The filter and filter chamber utilize polyvinyl chloride, Dynel and a phenolic, while the hose is of vinyl. The pump handles from 50 to 300 gallons per hour, and, the manufacturer says, filters out all particles larger than about 1 micron. The plastics are said to take in stride such materials as chromic, fluoboric and nitric acids, and the filter successfully handles solutions of ferric chloride, silver nitrate, iron and lead fluoborate and many others.

Test Detects Trace Ethanol

A simple procedure for detecting trace amounts of ethanol in liquids has been developed and reported in the literature. It is especially sensitive when used with liquids that are free from water.

The test first oxidizes ethanol to acetaldehyde and then permits detection of the latter by reaction with nitroprusside. As little as 3 micrograms of ethanol in one drop of a benzenethanol mixture can be easily detected. Presence of water in the test liquid results in hydration of some of the acetaldehyde and thereby decreases the sensitivity of the test.

One to three drops of the sample are placed in a micro test tube, and several centigrams of hot copper wire or cupric oxide are dropped into the tube. A disc of filter paper moistened with one drop of a freshly made reagent (consisting of equal volumes of 5% sodium nitroprusside solution and 20% aqueous morpholine solution) is placed over the top of the test tube. If ethanol is present, a deep to light blue stain appears on the paper almost at once.

Tank for Nuclear Reactor Fabricated Entirely of Zirconium Alloy

A new experimental nuclear power reactor utilizes a tank fabricated entirely of Zircaloy-2. The complex assembly illustrates how conventional fabricating techniques can be modified to permit the use of zirconium and its alloys.

Because zirconium is highly reactive at high temperatures, welds of the metal and its alloys must be shielded against air. This shielding was achieved with a water-cooled apparatus specially designed to fit the spherical and conical shapes of the welded surfaces. The apparatus also directed inert gas at and behind the torch.

Nat'l Distillers Changes Name To Reflect Growth of Activities In U. S. I. Chemical Division

Now National Distillers and Chemical Corporation; U.S.I. Head Made an Executive V.P.; Third of 1956 Profits from Chemicals

National Distillers Products Corporation has changed its name to National Distillers and Chemical Corporation.

The new corporate title reflects the substantial growth of the company's chemical operations, which last year contributed 34% of operating profits before interest, taxes and minority interest.

ATTENTION: Users of Taxfree And Specially Denatured Alcohol

Users of specially denatured and taxfree alcohols who are in the process of filling out forms for renewal of their basic and withdrawal permits should note that U.S.I.'s parent company has changed its name (see story, next column).

When you file your applications with the Assistant Regional Commissioner—Alcohol and Tobacco Tax Division, please be sure to use the new company name, U.S. Industrial Chemicals Co., Division of National Distillers and Chemical Corporation.

National entered the chemical field in 1950 when it built a sodium plant at Ashtabula, Ohio. This operation is now a part of the U. S. Industrial Chemicals Co. division, acquired by the parent company in 1951. Today, all chemical activities of the corporation are conducted through its U.S.I. division and its subsidiary, National Petro-Chemicals Corporation.

Elect New Officers

Coincident with the name change, John E. Bierwirth, president of the corporation, announced the promotion of a number of key executives. Among these were Dr. R. E. Hulse, Roy F. Coppedge and B. C. Ohlandt, who were elected executive vice presidents. Dr. Hulse is executive vice president in charge of the U.S.I. division, with responsibility for all

MORE

New Officers at National Distillers — U.S.I.

Dr. R. E. Hulse, new Executive V. P. of National Distillers and General Manager and V.P. of U.S.I. Division, directs Corporation's chemical operations. He joined National in 1949 as Director of Research and Development. William P. Marsh Jr., Assistant General Manager of U.S.I. Division and V.P. of National Distillers, has been named U.S.I. V.P. as well. Dr. Stuart Schott, with National since 1945, is new Research V.P. of U.S.I. Francis Olmsted heads the Development Department as a U.S.I. V.P. Alden R. Ludlow, Jr. joined company in 1934, has now been made U.S.I. Sales V.P. R. H. Cornwell was appointed U.S.I. V.P. of production, and is in charge of all U.S.I. and National Petro-Chemicals plants.

R. E. Hulse

W. P. Marsh, Jr.

S. Schott

F. Olmsted

A. R. Ludlow, Jr.

R. H. Cornwell

June 22 ★ **U.S.I. CHEMICAL NEWS** ★ 1957

U.S.I. "Chemical News" Marks 25th Anniversary

Has Largest Circulation of Any Publication in Chemical Industry

With this issue, U.S.I. "Chemical News" rounds out 25 years of service to the chemical processing industry. Today, "Chemical News" is the most widely circulated medium of its kind in its field. It is regularly inserted in all leading U.S. chemical periodicals, and in addition has substantial distribution by mail. Combined circulation is over 320,000.

Attracts Many Inquiries

The high degree of interest in "Chemical News" is reflected both in inquiries and in readership ratings, and last year it brought thousands of inquiries about the products and services mentioned in its columns. And it consistently gets the highest advertising readership ratings in publications where it appears.

One reason for this sustained interest is that "Chemical News" does not confine its columns to information about products of U.S.I. Considerable space is devoted to items about products of other manufacturers, to research findings and to processing technology. In short, "news value" is the editorial criterion.

The Technical Developments column, a regular feature of page 2, describes new products and processes that range across the entire industry. Manufacturers who have something new to tell their prospects can take advantage of this column by writing the Editor.


SOLVENT NEWS

SOLVENTS SHOW CHEERY NO CONTRACT IN CURRENT MARKETS

ALCOHOL PRICES RELEASED TO THE INDUSTRY FOR THIRD QUARTER

NO CHANGE FROM PRESENT LEVELS

ETHYL ACETO ACETATE DEMONSTRATES VERSATILITY

DU PONT OFFERS NEW WATERPROOF MATERIAL

NEW LACQUER LINSEED OIL ANNOUNCED

The first U.S.I. "blue sheet"—June, 1932. The name was later changed to "U.S.I. Chemical News" to reflect the expanding activities of the company.

Would You Like to Get "Chemical News" by Mail?

If you would like to make sure you see every issue of "Chemical News" or, if you keep a permanent file of them, as many readers do, ask to be put on the mailing list. Just write Editor, U.S.I. Chemical News, U.S. Industrial Chemicals Co., 99 Park Ave., N. Y. 16, N. Y.

New Polyethylene Squeeze Tube Keeps Original Shape

A new kind of squeeze tube has been developed. Made of polyethylene, it looks just like the familiar collapsible metal tube, but snaps back to its original shape after being squeezed to dispense part of its contents. In so doing, internal pressure is lowered and excess material at the mouth of the tube is sucked back inside. Advantages include less waste and no hardening or drying out of the tube contents.

CONTINUED

Name Change

chemical activities of the corporation.

Both Dr. Hulse and Mr. William P. Marsh Jr., U.S.I. Assistant General Manager and a Vice President of National Distillers, have been named Vice Presidents of the U.S.I. Division.

Four other executives were appointed U.S.I. vice presidents. They are: Robert H. Cornwell, who is in charge of production; Alden R. Ludlow, Jr., sales; Francis Olmsted, development; and Dr. Stuart Schott, research.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U. S. I.

A non-corrosive leak detection paint is reputed to be effective in quickly spotting fissures to 0.001 in. dia. in assemblies, systems, tanks, etc. Ammonia works a color change at fissure. Paint is easily washed or wiped off. **No. 1240**

A tributyltin oxide to control microbiological slime in pulp and paper mill systems is reported highly successful under all pH conditions. Also non-corrosive, low in toxicity, and very economical. **No. 1241**

A spray-on sign cleaning "solute" is offered as compatible with water of 0-50 grain hardness, fast-acting, simple to rinse off, and harmless to steel, paint, and personnel. Cost claimed 1¢ per sq. ft. cleaned. **No. 1242**

Another radioactive carbon-14 compound joins available uniformly and specifically labelled radioactive amino acids. Uses are expected in the study of biological systems and amino acid formation and metabolism. **No. 1243**

Updated activated carbon solvent recovery systems are said to recover numerous solvents at a very economical cost. They also appear to increase both process efficiency and employee productivity. **No. 1244**

Detergent concentration is constantly controlled over a narrow range by a unique controller using neither vacuum tubes nor transistor circuitry. Equipment is reported priced for a wide market, with installation low in cost. **No. 1245**

A self-contained temperature stabilizer, quart size and factory sealed, has been designed to maintain a specified temperature within insulated shipping packages of up to 800 cu. in. It is reusable on recharge by purchaser. **No. 1246**

A 24-page brochure on lanolin reviews industrial origins of this wax, its composition, properties, U.S.P. grades, its cosmetic and pharmaceutical uses as emollient and emulsifier. Guide formulations are included. **No. 1247**

A selective flocculant for ore refiners is said to precipitate dissimilar particles suspended in aqueous mixtures when only 0.002% based on weight is added to the ore suspension as a cold water slurry. **No. 1248**

A new book on public relations for the atomic industry is being marketed. It discusses the atom as news, what the public wants to know about it, sources of information and techniques for approaching the public. **No. 1249**

Official inducements to industry in 14 Southern states

	Consultation, surveys and other services	State tax relief	State loans for capital expenses	Access roads and other improvements	Plants and land to lease	Assistance for existing plants	Loans and tax relief from local governments	Financial aids from state-chartered private groups
Alabama	√	√					√	
Arkansas	√		√					
Florida	√							√
Georgia	√			√				
Kentucky	√	√	√					√
Louisiana	√	√		√	√	√	√	√
Mississippi	√	√	√		√		√	√
Missouri	√				√		√	√
North Carolina	√			√				√
South Carolina	√						√	√
Tennessee	√			√			√	
Texas	√						√	
Virginia	√			√		√		√
West Virginia	√	√	√	√				√

The New Look in Southern Hospitality

CHEMICAL process management men seeking new plant locations are becoming increasingly aware of the official aid-to-industry programs in effect or being adopted in Dixie.

In a survey of 14 Southern states from the Mason-Dixon line down and around through Texas (*see table*), CHEMICAL WEEK found state and local governments and private citizens going all out to attract industry.

In addition to port and transportation improvements (*CW, Dec. 1, '56, p. 34*), half of the states surveyed already grant, or are planning to give, some form of tax relief; and, in virtually all the states, special loans for capital expenditures are available from state, local or private sources.

Development Corporations: State or local development corporations are the primary sources of loans for incoming industries. In Arkansas, for example, the house of representatives is considering a senate-passed bill that would create the Arkansas Industrial Finance Corp. to aid in financing new industries in the state. Under the bill, the state could buy $5 million of the corporation's industrial development bonds. An additional $5 million of the bonds could be sold on a matching basis, with the state buying half and private investors, half.

Leasing Plants: A substantial number of Southern states, through enabling acts, permit certain or all political subdivisions to raise funds—often by voting bonds—to help finance new plant construction.

Mississippi permits political subdivisions to own and lease to manufacturing enterprises buildings especially

DIXIE ADVERTISERS

PAYOFF: Baxter's Cleveland, Miss., plant reflects 'BAWI' gain.

designed for manufacturing operations. Louisiana and Missouri have similar enabling provisions.

Behind Mississippi's industry-attracting program is the state's agricultural and industrial board with its "balance agriculture with industry" (BAWI) plan (*CW, Jan. 22, '55, p. 18*). Basically, the plan calls for stimulating industrial growth in the state by permitting communities to enter into and promote industrial developments.

Private Development Groups: In North Carolina—where there are constitutional restrictions against special-favor taxes and similar concessions—and in seven other Southern states, private, state-chartered development corporations carry a big share of the inducements-for-industry load.

Virginia has more than 50 such industrial development corporations set up to acquire land, erect plants and lease manufacturing facilities to operators. The corporations often work closely with local chambers of commerce. Local Virginia chambers of commerce led the fight to have the state legislature repeal a local tax exemption law—originally supported by the chambers—on the grounds that industries "bought" with tax exemptions are not "particularly beneficial."

Inducements Pay Off: Not all Southern states resort to direct inducements to attract industry. Notable holdouts: Florida—which relies on industrial parks and advertising—and Texas.

But it's a matter of record that inducements to industry, coupled with natural resources and certain market and labor advantages, are paying off for the South.

In Mississippi last year, investments of $150 million were made in new plants by manufacturers—about half of which represented new ventures in the state. Curt Siegelin, director of Louisiana's department of commerce and industry, reports that between 1947 and '56, more than $1.8 billion was invested in new and expanding industry in his state creating 62,000 jobs.

Alabama's industrial development board reports 59 new plants and 49 expansions of existing plants in 1955-56 for a total capital investment of $305.8 million, creating 10,536 jobs.

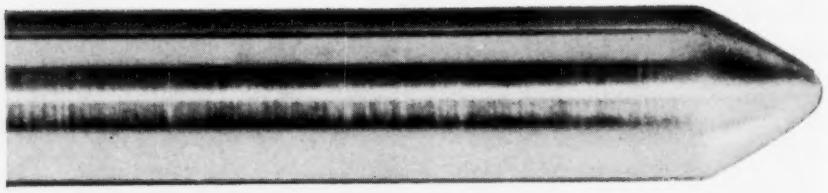
Georgia's Gov. Marvin Griffin says 287 new plants representing capital investments of $150 million were added in 1955, and another 126 plants went onstream during the first half of '56.

Cost-conscious chemical process management stands to profit from the South's determined bid for more industry. Not since the "carpet-bagging" days of reconstruction have the economic advantages for "outsiders" been so great—and this time the welcome mat is out.

VIRCO-PET 20

VIRCO-PET 20

Note the absence of corrosion from this steel specimen protected with 0.1% Virco-Pet 20 and exposed for 24 hours in a mineral oil-sea water system at 140° F.



ORDINARY INHIBITOR

Note the corrosion on this steel specimen, protected with a 0.1% commercial inhibitor and exposed for 24 hours in a mineral oil-sea water system at 140° F.

THE V-C LINE

Phosphorus, Elemental
Phosphoric Acids
Phosphoric Anhydride
Disodium Phosphate
Trisodium Phosphate
Tetrasodium Pyrophosphate
Sodium Tripolyphosphate
Sodium Metasilicate
Ferrophosphorus Slag
Dimethyl hydrogen phosphite
Diethyl hydrogen phosphite
Dibutyl hydrogen phosphite
Bis(2-ethylhexyl) hydrogen phosphite
Trimethyl Phosphite†
Triethyl phosphite†
Triisopropyl phosphite†
Tributyl phosphite†
Trihexyl phosphite†
Triisooctyl phosphite†‡
Tris(2-ethylhexyl) phosphite†
Tris(2-chloroethyl) phosphite
2-Ethylhexyl octylphenyl phosphite
Diethyl ethylphosphonate
Dibutyl butylphosphonate
Bis(2-ethylhexyl) 2-ethylhexylphosphonate
0,0,0-Triethyl phosphorothioate
0,0,0-Tributyl phosphorothioate
0,0,0-Triisooctyl phosphorothioate

and other organophosphorus compounds and phosphatic specialties.

†MFD. UNDER U. S. PAT. 2,678,940
‡U. S. PAT. 2,722,479

VIRCO-PET 20 is a versatile new corrosion inhibitor recently developed by Virginia-Carolina Chemical Corporation. In extensive tests, it has shown amazing effectiveness at low concentrations particularly under acid conditions.

Virginia-Carolina Chemical Corporation

Chemicals Division: 401 EAST MAIN ST., RICHMOND 8, VA. • *Phone 2-0113*

PROTECTS ALUMINUM AND STEEL FROM COSTLY CORROSION

Virco-Pet 20 is unique in that it protects both steel and aluminum, by forming a film or barrier on the surface that seals the metal against attack. Tests indicate special utility for these purposes:

Petroleum Equipment—for the protection of engine parts, pipelines, storage tanks, tankers, and other handling equipment.

Protective Coatings—in paint or wax formulations to enhance the metal protection of the coating.

Antifreeze Compounds—to protect radiators, heat exchangers and other equipment containing antifreeze solutions.

Miscellaneous Uses—in cleaners, polishes, solvents, and other products, to prevent container corrosion.

Virco-Pet 20 is a tan-colored, viscous liquid, specific gravity $\frac{20}{4}$—0.96—1.00; viscosity (stokes) 10.5—11.5. Readily emulsifiable in water, Virco-Pet 20 is soluble in acetone, ethanol, ethyl acetate, carbon tetrachloride, benzene, kerosene, gasolene, mineral oil, and ethylene glycol.

If you have a corrosion problem, it will pay you to evaluate Virco-Pet 20. Samples and additional information are yours for the asking. Just write us on your company letterhead. We will reply promptly or send one of our technical men to see you if you so desire.

VIRGINIA-CAROLINA CHEMICAL CORPORATION produces:
V-C Phosphate Rock...V-C Chemicals...V-C Fertilizers and V-C Superphosphates...V-C Multiwall Bags...V-C Cleansers V-C Nemacides...Vicara, Zycon* and Wavecrepe* zein fibers.*

VC CHEMICALS

*REG. U. S. PAT. OFF.

LEGAL

Narcotics Curbs: In the wake of increasing charges that athletes are resorting to drug stimulants, the Illinois legislature has proposed the most drastic offensive against illegal use of drugs in the state's history.

In the series of bills recently passed by the senate and sent to the house was one requiring that barbiturates and amphetamine (pep) pills be obtainable only by prescription. Another bill would create a commission to study various problems including those stemming from the wide use of tranquilizing pills.

•

Alcohol Tax Evasion Case: Two Freeport, Ill., liniment manufacturers have been indicted by a federal grand jury for alleged evasion of federal alcohol taxes totaling $3.5 million up through Sept. '54. The competing firms are W. T. Rawleigh Co. and Furst-McNess Co.—the latter formed by former Rawleigh employees and others.

Assistant U.S. Attorney Arthur Connelly said the companies distributed liniments and antipain oils ostensibly for external use only, but actually promoted them as also being for internal use. There's federal alcohol tax of $10.50/proof gal. on pure alcohol. Denatured alcohol—used in some dental preparations, but not suitable for internal use—is tax exempt.

•

Alleged Glass Conspiracy: Pittsburgh Plate Glass Co. (Pittsburgh), Libbey-Owens-Ford Glass Co. (Toledo) and four other glass manufacturers have been named defendants in a civil suit brought in U.S. district court (Chicago) under the antitrust laws. The suit was brought by 10 Chicago glass companies charging conspiracy to restrain trade and create monopolies.

The plaintiffs—seeking $2.6 million in damages—charge the glass makers with conspiring to control the Chicago glass business by refusing to sell to the plaintiffs and selling to each other at lower prices.

Soft Sell on Chemical Careers

Another opportunity for process industries to stir chemical-career interest in outstanding high school students: plant visits, arranged as part of student exchange program tours. Such a field trip recently brought a select group of students from Newton, Mass., High School all the way to Pittsburgh, where they took in pyridine-making at the Neville Island plant of Pittsburgh Coke & Chemical Co.

IDEAS

Square-Peg Project: Use of an electronic data processing machine to help determine who should be assigned to various high-qualification jobs is a new U.S. Air Force accomplishment hailed as a possible boon to private industry management.

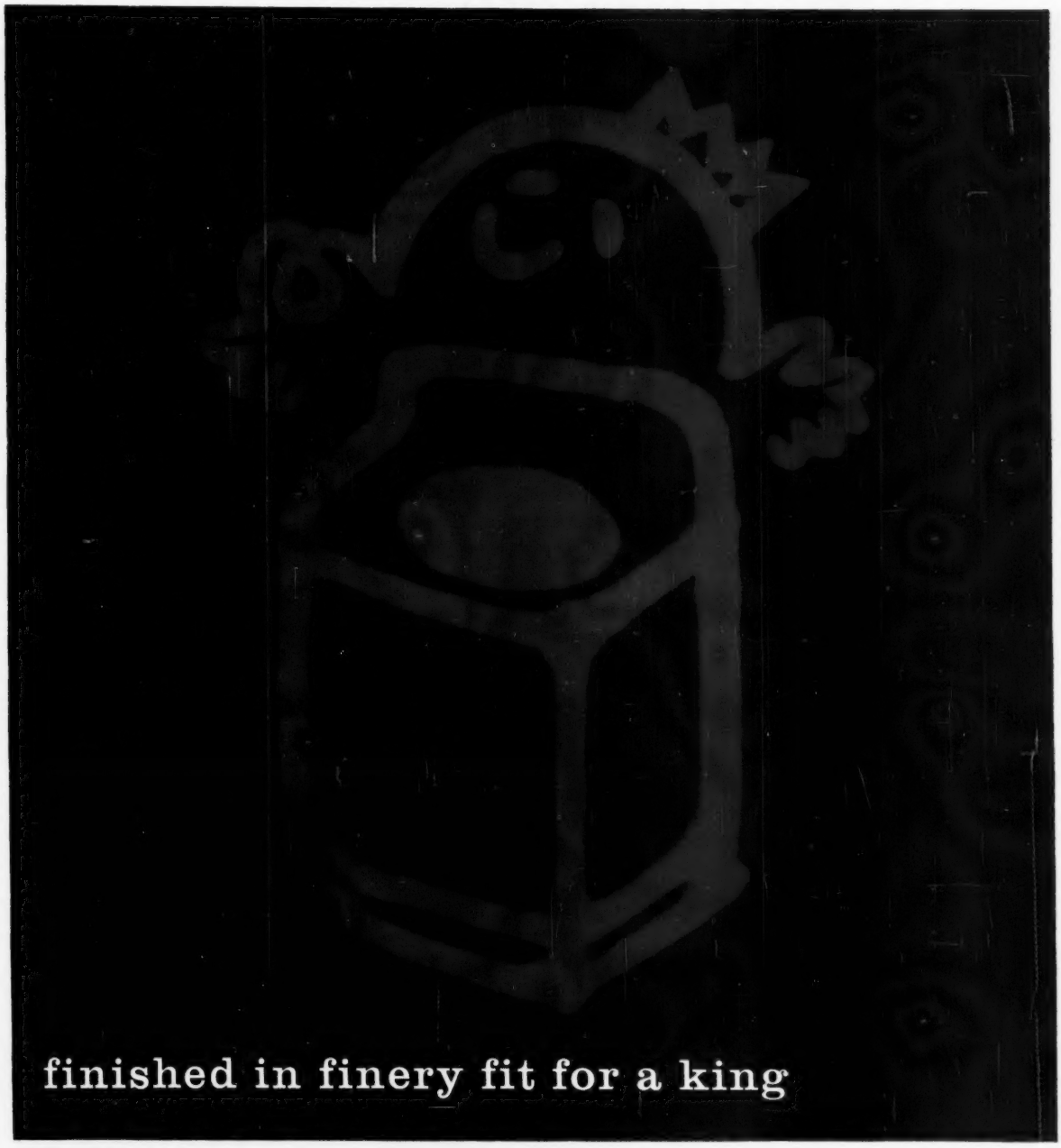
The new system—developed by USAF'S Air Research and Development Command at Baltimore—is based on punch cards containing information on the educational and experience backgrounds of the command's 3,200 research and development officers. When requirements for a specific job are fed into the machine, it sorts out the cards of officers who meet or come close to those requirements.

•

Retired Employees' Homecoming: Norton Co. (Worcester, Mass.) management is planning to schedule more "Retiree Homecoming Day" programs modeled after the one held last month. Nearly 400 retired employees returned to the plant and offices to visit their former departments, learn about the company's recent progress and future plans, and renew old friendships. The program —details of which were drawn up by a committee of six retirees—was held as an "expression of appreciation by the company for the interest and loyalty of the people who played such an important part in the past growth of the firm"; and as "a way of showing that they are still important members of the Norton family."

LABOR

Low-Fee Fund Code: One outcome of current probes into labor racketeering: a proposal—drafted by state insurance commissioners—for an ethical practices code to cover the handling of health and welfare funds. If adopted in the individual states, this code would prohibit excessive fees and commissions on all worker trust funds. Chairman Joseph Navarre (Michigan), of the National Assn. of Insurance Commissioners' subcommittee on health and welfare funds, notes that the proposed code calls for a maximum commission of four-tenths of 1% on large policies (annual premium volume



UNIFORMITY AND PURITY – these are the quality keynotes of Solvesso 100 and *all* Esso Petroleum Solvents. These are the solvents that set the standards *throughout* the paint and surface coating industries. For countless home appliances and many other products, Solvesso 100 assures top performance from force-dry finishes. It is the perfect companion for the other outstanding ingredients used to assure the best results in all protective finishes. And distribution through a highly developed supply system geared for peak efficiency, and utilizing modern, proven handling methods, assures industry that *all* the Solvesso solvents are *always* immediately available for prompt delivery. If your product needs "Finish Finery Fit For a King," order Esso Petroleum Solvents. Write or phone today! Esso Standard Oil Company, Inc., 15 West 51st Street, New York 19, New York.

SOLVESSO 100

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SOLVESSO TOLUOL · SOLVESSO XYLOL · SOLVESSO 100 · SOLVESSO 150
A FAMILY OF FOUR AROMATICS FOR ALL OF INDUSTRY'S REQUIREMENTS

PETROLEUM SOLVENTS
Reg. U.S. Pat. Off.

UNION LEADER STAHL: His job: to press for 30-hour week in 1959.

of $5 million or more) and a ceiling of 4.1% on small policies ($20,000 or less annual premium volume).

•

30-Hour Week Bid: One process industry labor union has come out four-square for the 30-hour week at 40 hours' pay. This is the position taken by Aluminum Workers International Union (AFL-CIO) at its third biennial convention, held last fortnight in Vancouver, Wash. The resolution directs the union's president, Eddie Stahl, and other officers to make this request a major item in contract renewal bargaining that will come up in 1959.

AWIU delegates voted not to merge with United Steelworkers (also AFL-CIO), a union that represents even more employees in primary aluminum production than AWIU does. The delegates likewise rejected the idea of a new union made up of aluminum plant locals of both present unions, and even refused—unanimously—to set up a committee to explore merger possibilities.

•

Linde Strike Settled: A two-year contract with a one-year wage reopener has ended the more than four-month strike by an OCAW local at the Kittanning, Pa., plant of Union Carbide's Linde Co. division. Hourly wage increases range from 12 to 15¢. This wraps up all but one of the Linde-OCAW disagreements that were manifested in concurrent strikes at five plants earlier this year. Still hanging fire: the no-contract situation at Linde's plant in Youngstown, O., where employees are on the job pending a National Labor Relations Board decision on a petition for a decertification election.

•

Layman's Guide to Labor Laws: A new publication by the U.S. Dept. of Labor—"Federal Labor Laws and Agencies," Bulletin 123—would be a minor addition to the library of a large company's industrial relations department; but it could be a handy reference book for plant managers and other executives devoting only part-time to labor relations. The 119-page paper-bound booklet may be purchased from the Government Printing Office at 40¢/copy (25% discount on orders of 100 or more); single copies may be obtained free from the Bureau of Labor Standards as long as its supply lasts.

KEY CHANGES

Hendrik F. van der Laan, to president, Vitro Rare Metals Co., a division of Vitro Corp. of America (New York).

Fred M. Stefan, to executive vice-president, Marbon Chemical Division, Borg-Warner Corp. (Chicago).

William J. Haude, to president, Grace Chemical Co. Division, W. R. Grace & Co.

Robert W. Kerr, to technical director, Kessler Chemical Co. (Philadelphia).

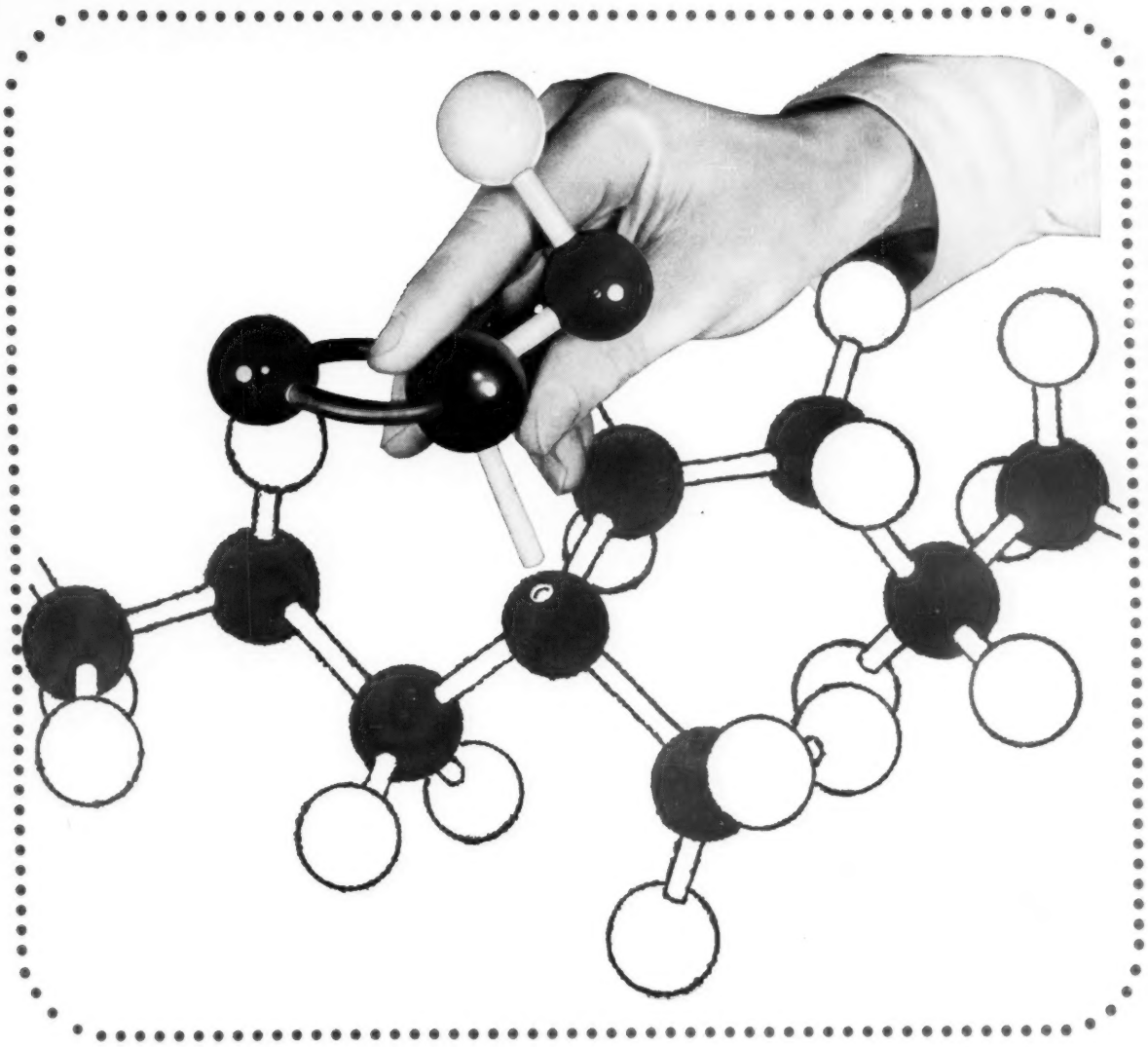
Donald S. Taylor, to vice-president in charge of research; and **Richard F. Steel,** to assistant general manager; U.S. Borax & Chemical Corp. (Los Angeles).

Lester L. Weil and **Keith E. Rumbel,** to vice-presidents, Atlantic Research Corp. (Alexandria, Va.).

George T. Collins, to director of operations, Pennsalt International Corp., subsidiary of Pennsalt Chemicals Corp. (Philadelphia).

KUDOS

To **P. J. Wood,** technical director, Royce Chemical Co. (Carlton Hill, N. J.), 1957 Olney Medal of American Assn. of Textile Chemists & Colorists.



For improved copolymers . . . add carboxyl groups by copolymerization with methacrylic acid

Rohm & Haas methacrylic acid offers a convenient and economical means of introducing carboxyl groups by copolymerization with monomers such as styrene, acrylonitrile, butadiene, acrylates and methacrylates. The addition of carboxyl groups, often in small proportions, may provide one or more of such advantages as:

- Improved adhesion
- Emulsion stability—both mechanical and freeze-thaw resistance
- Solubility in alkalies, including ammonia
- Reactive, cross-linkable groups which permit vulcanization with such agents as zinc oxide, diamines or epoxides.

Glacial methacrylic acid is readily available from full-scale commercial production. It is one of 18 acrylic monomers now available from Rohm & Haas. For full information on acrylic monomers write to Department SP.

Chemicals for Industry

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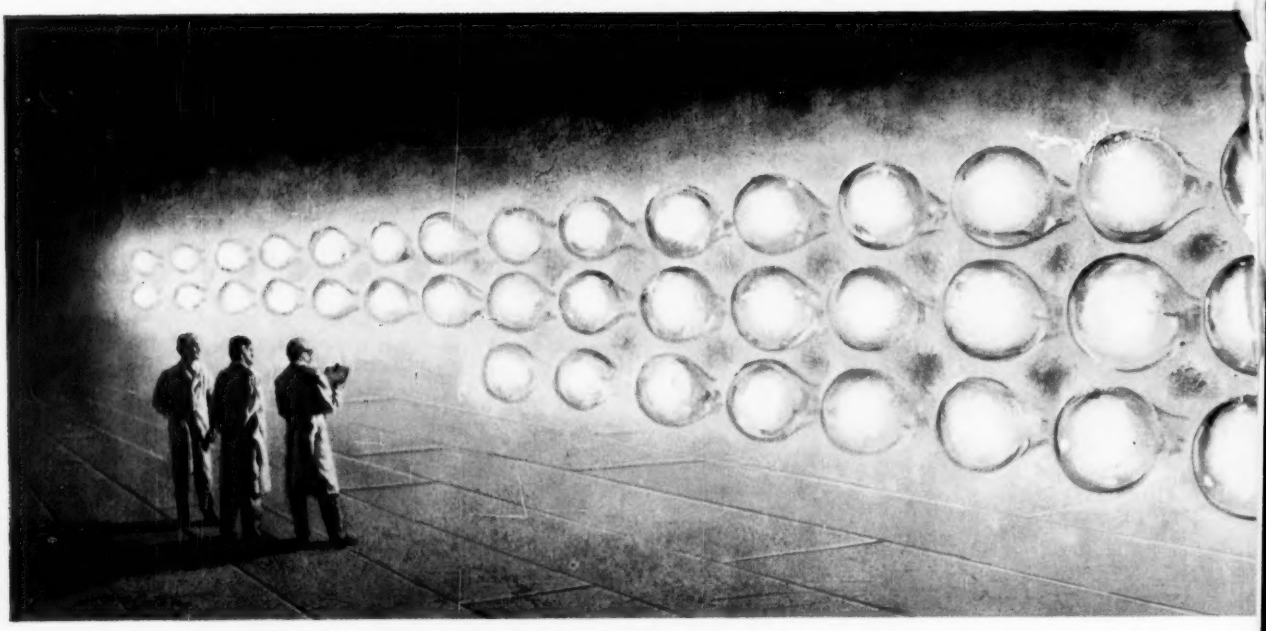
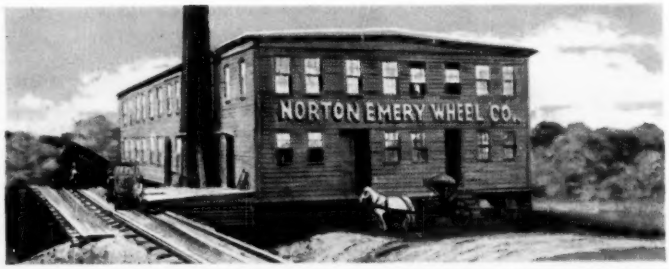
Representatives in principal foreign countries



This year Norton will use over

533 million KWH to bring

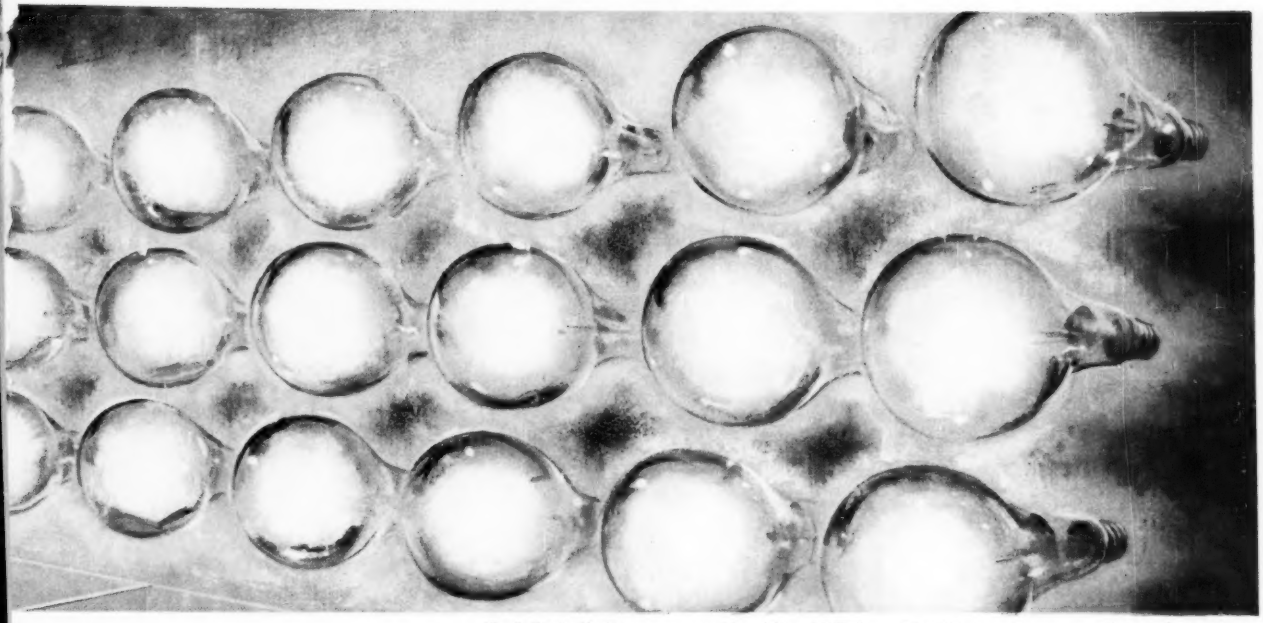
Niagara's Power was tapped by Norton Company in 1901 for economical hydro-electric power. Here electric furnaces fuse huge quantities of alumina into Norton ALUNDUM* abrasive.



15 HP was News! In 1886 Norton Company astounded New England industry when it installed a 15 HP motor to modernize its manufacture. Last year Norton opened new plants in California, Alabama and three foreign countries to fill industry's needs.

Electric Furnace Products are a natural outgrowth of Norton research in a multitude of materials fused for greater usefulness and versatility. Nineteen Norton laboratories keep up the daily search for better materials. There's the "Touch of Gold" vein in Norton electro-chemical work, too, if you like.

Making better products...



Each Light Bulb represents 10 million KWH used by Norton Company plants throughout the world in making its abrasives and other Norton products in a single year.

industry the "Touch of Gold"

The now famous Norton "Touch of Gold" is no Midas magic. It is much more complex than that. And, of course, infinitely more certain and more lasting.

"Touch of Gold" is a modern expression for describing the value-adding contribution Norton abrasives make to manufacture. Each time a Norton grinding wheel touches a material in process or sharpens a tool that performs a process it makes some product more useful and more perfect and therefore more valuable.

To give the world's industries this "Touch of Gold," you can gauge Norton's resources by the 533 million KWH it will use this year to make its own products . . . which in turn make your products better.

Norton Company is the world's largest producer of abrasives, with the largest research and development facilities in this field.

NORTON
ABRASIVES

Ceramic Rokide* Coating helps metals stand up under the higher temperatures encountered in jet planes and rockets. Here ROKIDE is sprayed on a guided missile part. ROKIDE is now being used in many different applications in industry.

Across the world and still expanding

Abrasive and Grinding Wheel Plants—Worcester, Mass.; Santa Clara, Calif.; Hamilton, Ontario; South Africa; England; France; Germany; Italy; Brazil. **Behr-Manning Plants**—*Coated Abrasives and Behr-cat Tapes*—Troy, N. Y.; Canada; Australia; France; Northern Ireland; Argentina; Brazil. **Electric Furnace Plants**—Huntsville, Alabama; Chippawa, Ontario; Cap-de-la-Madeleine, Quebec; Brazil. **Grinding and Lapping Machine Plant**—Worcester, Mass. **Refractories and Electro-Products Plant**—Worcester, Mass. **Norton Pike Plant**—*Sharpening Stones*—Littleton, New Hampshire. **Bauxite Mines**—Bauxite, Arkansas.

General Offices: Norton Company, Worcester, Mass.

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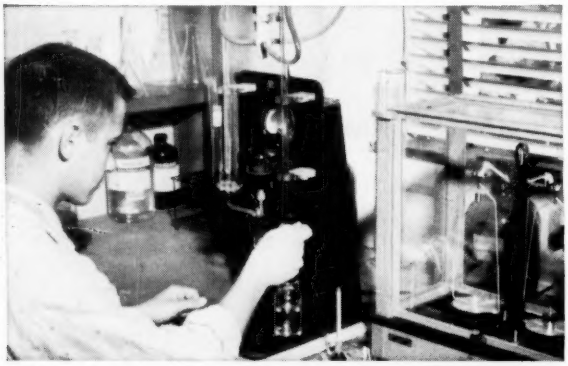
You get these benefits with CARBIDE's Glycols...

Advantages of combination shipments—compartment tank cars and tank trucks; 55-gal. drums in carload or mixed carload lots.

Dependable delivery—nationwide locations of distribution centers assure you of efficient service and continuous supply.



High purity—analysis for water content, shown above, is one of a series of tests run on chemicals before shipment; specifications are actually triple-checked.

Technical assistance—from technical representatives who are chemists and engineers specializing in the solution of your storage, handling, and application problems.

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Union Carbide Chemicals Company
Division of Union Carbide Corporation
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Ethylene Glycol, Diethylene Glycol, and Triethylene Glycol

Order from Union Carbide Chemicals Company for immediate delivery to your plant site. To meet your requirements—ethylene, diethylene, and triethylene glycols are available in various specification grades.

Ask our Technical Representative for more information—or write for: data on ethylene glycol (F-8327), diethylene and triethylene glycol (F-8371), or the Glycols Booklet (F-4763). Address—Union Carbide Chemicals Company, Room 328, Dept. S., 30 East 42nd Street, New York 17, N. Y.

THESE POLYOLS ARE ALSO AVAILABLE IN COMMERCIAL QUANTITIES

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In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal.

Five-Nation China Trade Roundup

BRITAIN—Chemical exports to Red China, currently running at a $3-million/year rate, will double within 12-18 months as a result of British relaxation of trade restrictions. Bulk of business is expected to come from antibiotics, other pharmaceuticals, agricultural chemicals, dyestuffs and organics.

FRANCE—French manufacturers will gain little benefit should the nation also relax China trade restrictions. France, generally, is not in a strong export position on items freed from restriction, since little surplus capacity exists for such items. Yet, manufacturers want trade liberalization to prevent Britain from getting a strangle hold on China markets.

WEST GERMANY—Chemical industrialists are optimistic about future business with China; Germany increased chemical exports to China on unrestricted items 10% last year. Relaxation of present restrictions is not expected before early 1958.

JAPAN—Virtually no effect is foreseen if Japan duplicates the British action. Japan's biggest trade with China is in unrestricted materials—fertilizers, pesticides and pharmaceuticals. Some demand is expected for rubber compounding agents, synthetic textile plants.

UNITED STATES—Only an indirect effect is anticipated as long as the U.S. maintains its full embargo on China trade. Sales of raw materials to countries producing for China markets may increase. Competitive pressure in free-world markets may ease slightly as other nations begin to trade with China.

Scramble on for Red China Chemical Trade

Restrained optimism is permeating the ranks of foreign chemical producers this week as they begin to evaluate the impact of what less restricted trade with Communist China will mean.

Britain and Norway, in a general relaxation of trades rules, have lifted the embargo on all chemicals to China except those also barred to Russia and its satellites. Most other countries of the free world are expected to announce similar relaxations within a year, possibly a good deal sooner.

Spurring the optimism, of course, is the staggering potential of the Chinese market. Although Red China's annual chemical purchases from Western nations have been running at a modest, $100-million clip (*CW, May 11, p. 97*), the country's huge (600 million) population suggests an equally huge capacity for chemical consumption. And the country is now fast industrializing. Russian chemical output isn't expected to be able to satisfy Chinese demands.

British chemical producers are the most enthusiastic. That's because they believe that Britain, by being first to ease trade restrictions, will obtain a competitive jump. Another important reason is China's £67 million of sterling reserves. The British look forward to a 100% growth in chemical exports to China within 12-18 months; 1956 exports totaled $3 million.

Top Secret: No one in British industry or government will reveal precisely what chemicals have been freed by the de-embargo. A spokesman for the British Council for the Promotion of International Trade says: "We have talked with the Chinese and have a good idea of what they want. But we don't want our competitors overseas to know until later what chemicals are involved."

China is still on the United Kingdom's common embargo list for trade with the Soviet bloc, a list identical with that of other major NATO nations.

Covered by this list are relatively few, strategically important, items: most compounds of beryllium, chromium, cobalt, gold, indium, molybdenum, selenium, zirconium, gallium, germanium and radioactive materials.

Other war-vital metals, too, are likely to stay embargoed, as will explosives, polyvinyl butyral and polyethylene, silicones, octyl and nonyl

These chemicals* can now be shipped by Britain and Norway to Red China

But how much will Red China buy?

Acetic acid
Acetic anhydride
Acetone
Aluminum chloride, anhyd.
p-Aminophenol and derivatives
Ammonium nitrate
Aniline
Antibiotics
Antimony and compounds
Asbestos
Benzene
Bismuth compounds
Cadmium and compounds
Carbon blacks
Catalysts, nickel deposited on other materials
Cellulose nitrate under 12.3% N
Chlorfluoromethanes
Chrome oxide (green)
Chromic acid
Dichlorostyrene
N, N-dimethyl aniline
Ethyl cellulose
Ethylene dibromide
Formaldehyde
Glycerol
Hydroquinone
Isopropyl alcohol
Lithium and compounds
Methanol
Methyl isobutyl ketone
Mica
Monochlorobenzene
Mononitrobenzene
Naphtha solvents
p-Phenylene diamine
Phosphoric acid catalyst
Phosphorus
Phthalic anhydride and esters other than alkyds
Polyisobutylene
Polypropylene glycol
Potassium chlorate
Potassium dichromate
Potassium nitrate
Potassium perchlorate
Potassium permanganate
Potassium tetroxide
Pyrites
Rubber accelerators and anti-oxidants
Sodium chlorate
Sodium cyanide (95%+)
Sodium dichromate
Sodium
Sodium nitrate
Sodium perchlorate
Strontium compounds
Styrene
Sulfuric acid, including oleum
Talc
Tars, unrefined coal
Thallium bromiodide
Tin and compounds
Tricresyl phosphate
Tungsten compounds
Vanadium compounds
Zinc and compounds

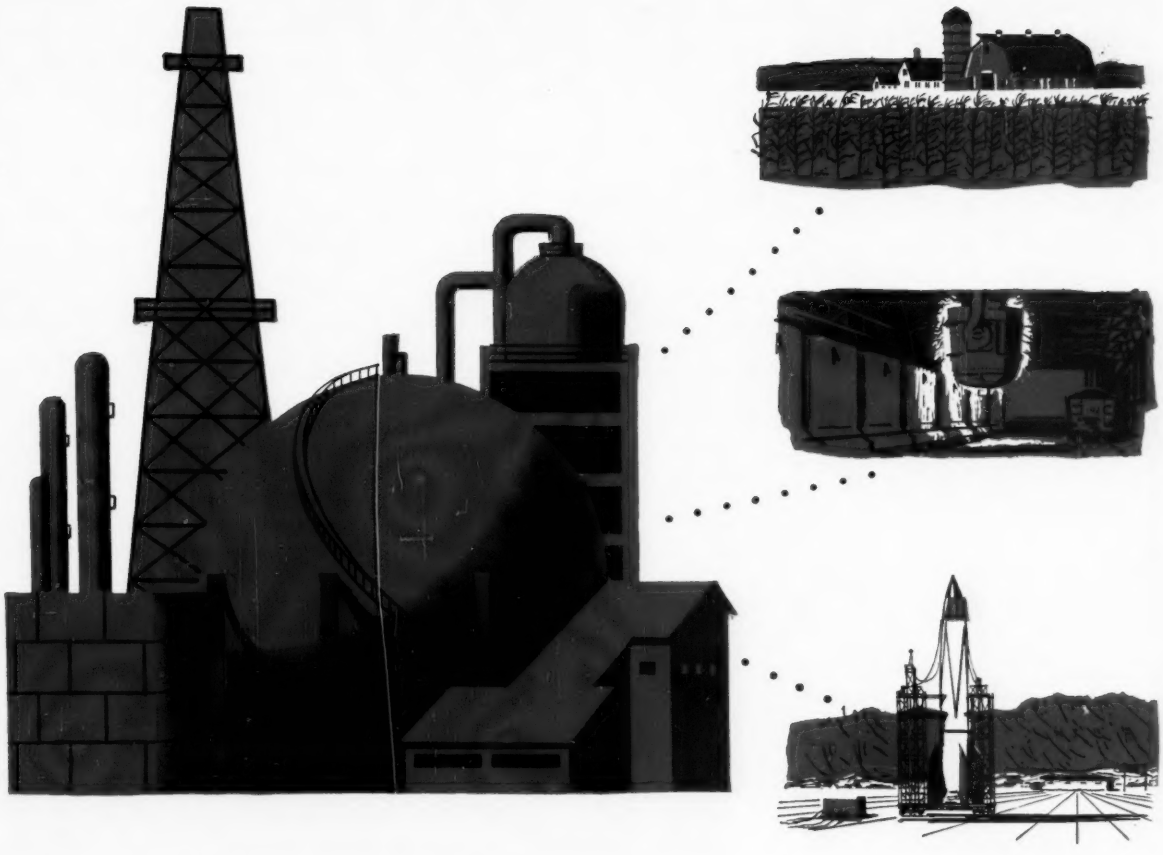
*List compiled from files of the Senate Permanent Investigations Subcommittee. Chemicals listed are those known to have been embargoed as far as trade with Red China was concerned; their trade with Russia and other satellites has been generally permitted.

sebacates, glycols and derivatives, naphthenates and lube oil additives. Thus, the trade door for most chemical commodities is wide open (*see p. 60*). Big boosts are expected in non-restricted items: fertilizers, insecticides, weed killers, dyestuffs, pharmaceuticals and antibiotics.

Yet, a booming chemical trade between China and the West may not be realized in the near future. Some hold that since China's new five-year plan is about to go into effect, China may have geared its needs to Russian and satellite imports. And Chinese administrative machinery is slow.

Continental View: In West German chemical circles, the British decision is being warmly welcomed. But Bonn isn't expected to loosen the embargo until next year. Fertilizers, tar colors and other industrial chemicals loom large in export plans. British competition isn't expected to hurt German trade with China. Switzerland, East Germany and Japan are West Germany's biggest competitors in the Far East.

French chemical companies also favor freer trade with China now. But their motive is more to prevent Britain from monopolizing the market than



Atlantic makes Anhydrous Ammonia for every use

Anhydrous ammonia is a versatile chemical raw material. It is used in the manufacture of fertilizers, stainless steels, plastics and rocket fuels—to name only a few of its industrial applications.

Whatever use *you* have for it, Atlantic is ready to supply it promptly . . . *and* to provide expert technical assistance in its applications.

Anhydrous ammonia is only one of the Atlantic family of petrochemicals. Both industry and agriculture are constantly finding new and profitable uses for Atlantic petrochemicals, which are characterized by uniform quality and stable supply.

For more information on anhydrous ammonia and other Atlantic petrochemicals, write or wire The Atlantic Refining Company, Dept. H-6, at the nearest office listed.

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PETROLEUM
CHEMICALS

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In Canada: Naugatuck Chemicals Division of Dominion Rubber Co., Ltd.

In Europe: Atlantic Chemicals SAB, Antwerp, Belgium

In South America: Atlantic Refining Company of Brazil, Rio de Janeiro

to obtain large volumes immediately.

French companies tell *CW* that they haven't got enough capacity for many items (acetone and vinyls, for example) to sell much abroad. Substantial sales growth is planned for fertilizers and pesticides. Markets for those commodities are expected to be good for 20 years.

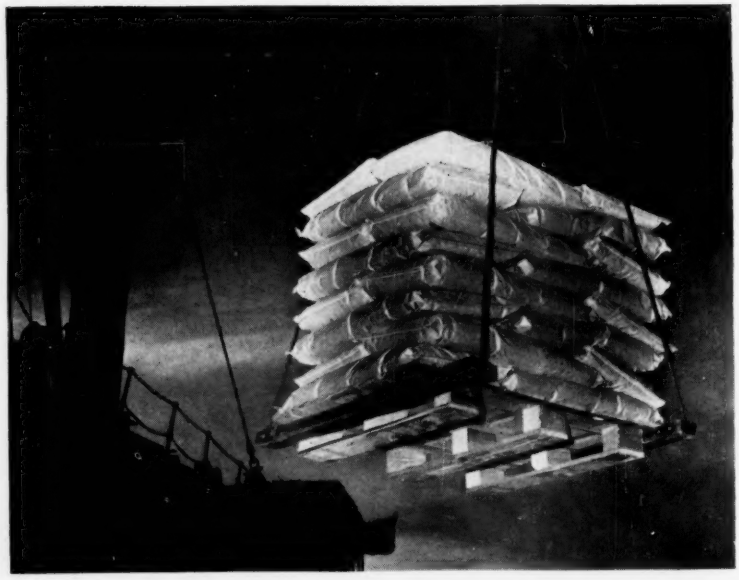
Undoubtedly, France will relax trade restrictions. But the unstable political situation, the Algerian problem and other issues have priority. France probably won't ease its embargo for 3-4 months.

Asian Outlook: How much the embargo is restricting Japanese efforts to increase trade with China is open to question. Heaviest demand is for unrestricted items (e.g., fertilizers, drugs). And China's ability to pay is important. Excepting coal, there's little more that Japan could profitably import from China now. Consequently, Japanese chemical executives see little practical value resulting from a less severe embargo, Exports of rubber-compounding agents and synthetic-textile plant machinery, however, might increase. Japan will probably jump on the "free trade" bandwagon.

Potomac Silence: The threatened wholesale relaxation of the China embargo finds few outspoken critics in Washington. At his most recent press conference, the President failed to see much advantage in maintaining the total embargo, indicated he would not oppose some limited trade with Red China.

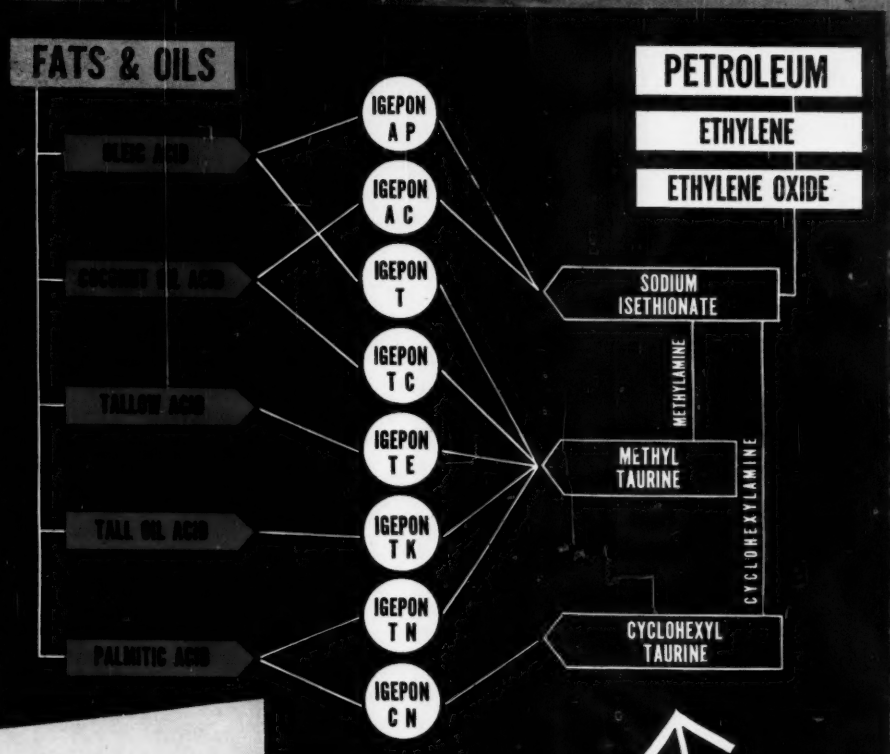
Since no U.S. trade with China is legal now, domestic chemical producers would gain from any relaxation of the embargo. Fertilizer and pharmaceutical producers, especially, might be able to cash in.

Major changes in U.S. policy, however, are probably at least a year away. Aside from more obvious effects, our embargo hurts the Communist bloc by forcing Red China to bring in U.S.



Isophthalic Poised for a Plunge

Isophthalic acid from California is about to plunge into Eastern and Midwestern chemical markets in a big way. Oronite Chemical is shown here unloading its first major shipment to the East, a whopping million-pound cargo being set down at Port Newark, N. J.—primarily for makers of protective coatings and fiberglass-reinforced plastics. At the moment, Oronite plans shipments to Port Newark only, but may add distribution facilities at Baltimore, Philadelphia and Gulf Coast ports. The isophthalic acid is produced at Standard Oil of California's 50-million-lbs./year Richmond, Calif., plant.



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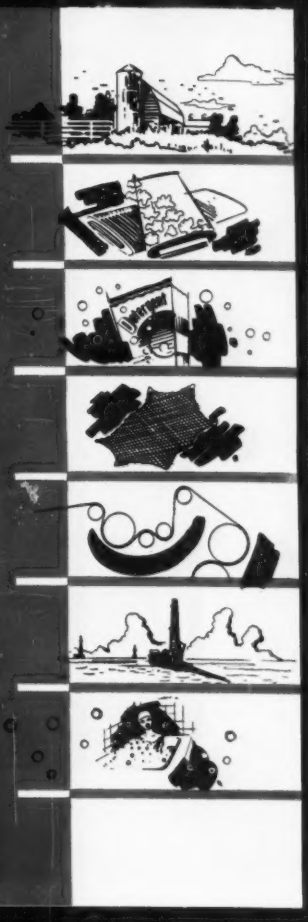
There are 8 basic Igepons, each supplied in various concentrations and physical forms, and there is one to do the job for you.

Igepons are important in many industries, including cosmetics, textiles, detergents, paper, leather, agricultural and industrial chemicals, to improve a product or process. In some cases, an Igepon is selected because of its high or low foaming characteristics, its unique dispersing or emulsifying qualities, or for its excellent detergency; in others, an Igepon is selected for its wetting power, chemical stability or physical properties.

So whether you're looking for a surfactant in an agricultural wettable powder, a base for laundering detergents, or a bubble bath formulation, check with us on the correct Igepon to use in your particular application.

Write us today for information and samples of these unique, versatile surfactants.



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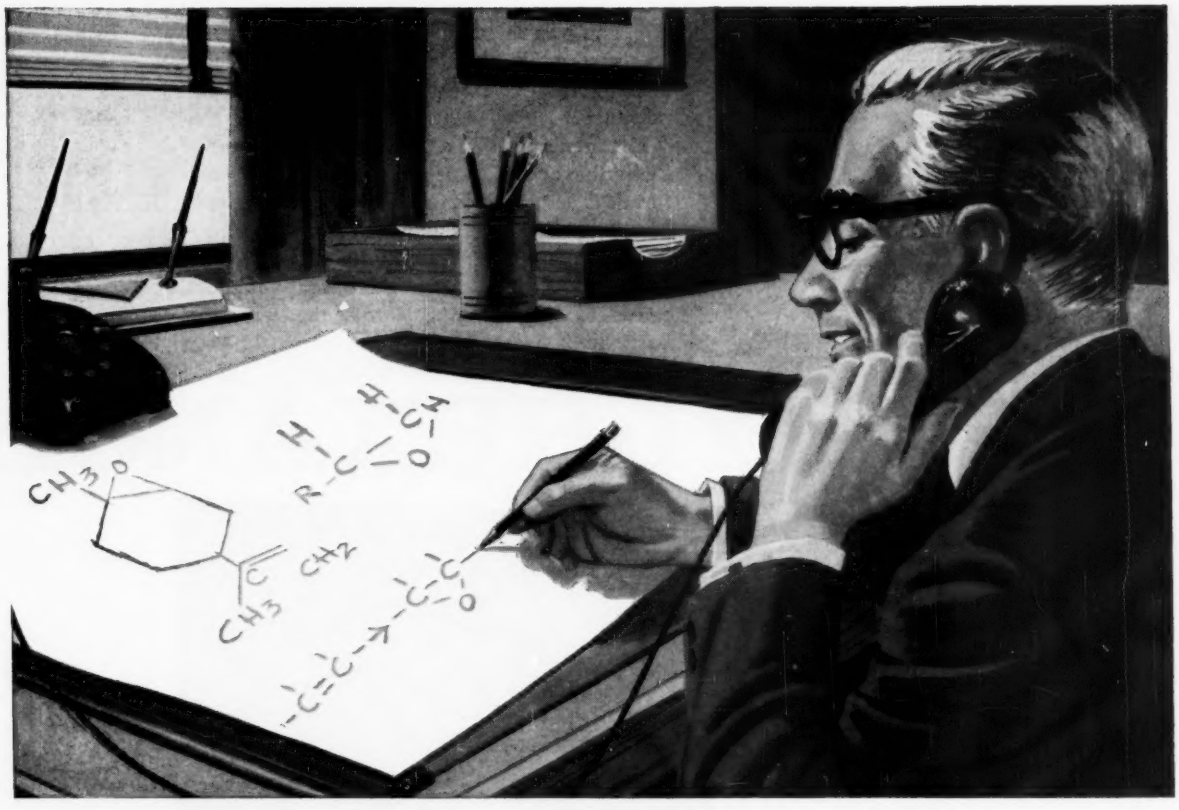
SALES

goods via friendly nations. This puts a strain on the Communist transportation system. Keeping good diplomatic relations with small Asian countries will also remain an important deterrent to a change in our relations with Red China.

U.S. chemical companies can expect only indirect benefits from increasing free-world commerce with Red China: increased foreign demand for raw materials, less competitive pressure in free markets.

DATA DIGEST

- **Antioxidant:** 16-p. brochure outlines use of butylated hydroxytoluene as an antioxidant for storage stability and vitamin retention of farm feeds and oxidation-sensitive human food. It includes data on flowability, particle size, color stability, static charge and economy. Chemical Division, Koppers Co., Inc. (Pittsburgh).
- **Breaking lubrication barriers:** 16-p. brochure covers history, development of molybdenum disulfide lubricants. Featured are technical aspects of moly sulfide as an extreme pressure lubricant, photos showing variety of uses, catalog-type selection table and evaluation charts. Alpha Molykote (Stamford, Conn.).
- **Foreign import requirements:** Quick reference guide to import requirements of 168 foreign nations. Exporter can determine specific consular documents, charges, and exact phraseology required for shipments to virtually any part of the world. Countries are listed alphabetically, keyed by number to indicate regulations that apply. AEI-Air Express International (New York City).
- **Acrolein dimer:** 8-p. technical bulletin discusses physical properties, shipping data, chemical properties, reactions, and physiological properties of acrolein dimer. Union Carbide (New York City).
- **Training movie** on aluminum finishing: 15-minute 16-mm. movie in color and sound, titled "Aluminum Finishing," is available for free showing to industrial firms, technical groups, and interested organizations. Film, intended primarily for training purposes, demonstrates all aspects of aluminum finishing from precleaning prior to conversion coating to painting and final assembly. Turco Products (Los Angeles).



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Want to make a molecule more reactive? Want to build new organic structures? Want to improve stability of your chlorinated products? Want to manufacture plasticizers, surfactants, insecticides?

Epoxidation may be the answer and Becco has the know-how . . . has developed economical epoxidation processes based on the use of organic peracids, preformed or produced *in situ*.

Becco's epoxidation research has also produced several new epoxy compounds; three olefin epoxides, two terpene oxides . . . important intermediates in the manufacture of pharmaceuticals, perfumes, flavors; as plasticizers, surfactants and in other uses.

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FMC CHEMICALS INCLUDE: **BECCO** Peroxygen Chemicals • **WESTVACO** Phosphates, Barium and Magnesium Chemicals • **WESTVACO** Alkalis, Chlorinated Chemicals and Carbon Bisulfide • **NIAGARA** Insecticides, Fungicides and Industrial Sulphur • **OHIO-APEX** Plasticizers and Chemicals • **FAIRFIELD** Pesticide Compounds and Organic Chemicals

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2-ETHYLHEXANOL

When you're talking about 2-ethylhexanol, you're talking about a 50,000,000-lb. a year alcohol and a chemical of major industrial importance.

Eastman's position as a basic manufacturer of 2-ethylhexanol from petroleum derived raw materials is your assurance of a dependable supply of this important alcohol, both from the standpoint of quantity and quality.

In placing your next order for 2-ethylhexanol, consider all the advantages you gain through an *Eastman* contract.

SPECIFICATIONS:

Color, APHA	5 max.
Specific Gravity, 20°/20°C	0.8325-0.8340
Acidity, as acetic acid	0.01% max.
Boiling Range, 760 mm	181.0°-185.0°C.
Aldehydes, as 2-Ethylhexanal	0.70% max.
Unsaturation, as 2-Ethylhexene	0.15% max.
Acid Reflux Color, APHA	100 max.
DOP Test Color, APHA	100 max.

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Technology
Newsletter

CHEMICAL WEEK
June 22, 1957

Look for word soon about a new force in boron fuels.

Olin Mathieson and U.S. Borax are believed to be currently negotiating a joint venture. Just what the deal would involve is something of a question. But U.S. Borax last February admitted, in a prospectus filed with the Securities and Exchange Commission, that it was holding talks with "another domestic company" concerning the advisability of establishing a jointly owned company to carry on research and production in the fields of boron and lithium chemistry.

The advantages of such an arrangement to both firms are fairly clear-cut. U.S. Borax, which, as a once-foreign-organized firm, has not been given access to classified information in the high-energy fuels field, would get a chance at such data in a joint ownership. It would also get an equity in Olin Mathieson's handsome, $40-million boron-derivative fuels plant at Niagara Falls, N.Y.

OM, on the other hand, would get a boron raw material source. Now, it depends on Stauffer for boron trichloride and on Metal Hydrides for sodium borohydride in its Niagara Falls operation. Presumably, when it starts up its big plant, it will make its own trichloride.

How lithium will fit in is not clear. In the February prospectus, U.S. Borax pointed out that although it had extensive deposits of lithium and although it had developed a process to extract lithium chemicals, such extraction simply isn't economical right now.

There are some potential hurdles for such a deal, however. As U.S. Borax has pointed out, any such move to get access to classified files would require government clearance. Also, it's thought that Olin Mathieson will drive a hard bargain before giving up any portion of its operation of the boron fuels project.

•

Olin Mathieson's E. R. Squibb & Sons division was also in the news last week for supposedly working on a cancer "cure." But Squibb takes great pains to point out that its drug has a long way to go. Believed to be related to a female sex hormone (possibly either 9-alpha-bromo-11-ketoprogesterone or 9-alpha-bromo-11-oxyprogesterone), the compound is under clinical study at Sloan-Kettering Institute, the University of Miami and Jackson Memorial Hospital in Miami. And it's due for further study by the National Institutes of Health.

•

Ciba is going into production of high-purity rare metals in Switzerland. It will make them in a plant at Monthey. So far, Ciba has said only that it will make certain of the metals used in nuclear energy applications, rockets, jets, gas turbines. One product, at least, that's likely to be made is zirconium.

Technology

Newsletter

(Continued)

A new process for producing metallized finishes from aluminum powder has been developed by Metals Disintegrating Corp. (Elizabeth, N. J.). It treats the powder with mono- or diammonium phosphates. This enables them to be incorporated into aqueous systems such as acrylic or polyvinyl acetate emulsions, to produce glossy, noncracking metallized paints or textile coatings. The real trick in developing such a process is to come up with a nongassing composition. And MD feels confident on that score; it has had such compositions on stability tests for 8 months, feels they'll be nongassing for an indefinitely long period.

The firm has not said anything about the process officially. But it has been quietly informing raw material suppliers, has told some of them, in fact, that some paint companies are already marketing products based on the system.

The potential for the work is big. Alcoa saw the prospects some time back when it developed a system it thought to be nongassing. But though preliminary tests on the product looked promising, it didn't prove stable enough.

Metals Disintegrating, however, is a pioneer in the metal powder field (it formerly distributed through U. S. Bronze Powder) and is certainly aware of the problems that previous workers encountered.

•

Minneapolis-Honeywell will make a data processing system capable of converting information into numbers at a rate of 10,000/second. Called the Instrument Digital On-line Transcriber (Idiot), it was developed by North American Aviation. Information, absorbed as electrial signals, is converted into numbers and placed on magnetic tape. Then, through an electronic playback, it's translated into the language necessary for additional automatic processing by electronic computers.

•

A $500,000 experimental plant to recover sodium and sulfur values will be built by Consolidated Water Power & Paper Co. at its Wisconsin Rapids plant. It will use a process developed by Western Precipitation Corp.

Feature of its process that Western Precipitation is plugging is that it can be employed in standard kraft mill equipment.

Abbott's interest in plants as a source of medicinals (*CW, Nov. 3, '56, p. 104*) has paid off in a new drug to combat atherosclerosis. Called Saff, it's a safflower oil emulsion, high in unsaturated fatty acids—materials that are thought to cause a decrease in blood cholesterol, and thus reduce chance of developing atherosclerosis. This theory, based on the work of Laurence Kinsell (Oakland, Calif.), has lately won some advocates. But Kinsell himself has said that " . . . there should be no implication that all the public has to do is to take a couple of tablespoonfuls of safflower oil daily to duck heart trouble" (*CW March 23, p. 60*).

How this gum man got unstuck

(Dow salesmen welcome another increase in Methocel production)

Few products have won the approval of industry like Methocel® (Dow methylcellulose). The ability of this synthetic gum to end viscosity-control and other production problems has brought an increasing demand from manufacturers of paint, paper, pharmaceuticals, shampoo, foods and a host of other products.

So great has been demand that our salesmen at times found themselves empty-handed. They had a gem of a product to sell, but it didn't need selling.

We've been producing Methocel as fast as men, machines and money can operate. We've expanded and expanded and now have expanded again . . . making available a *family* of Methocel products that includes nine types in a wide range of viscosities.

This improved situation assures better scheduling of shipments. And if you would like to do research and development work with these synthetic gums of never-varying quality, we'd be pleased to send a sample. THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. BD 839A.

YOU CAN DEPEND ON DOW

CLINICAL SESSIONS: Round table discussions by small groups iron out mutual management problems.

How Research Directors Get a Fresh Slant o

CONVERSATION: For old acquaintances, reminiscence.

Last week, at baronial Arden House (Harriman, N.Y.)—the Columbia University-owned aerie atop a ridge in the Ramapo Mountains—some 60 research directors gathered from distant points to swap ideas. Their subject, theme of Columbia's eighth annual conference on industrial research: the processes of research management and its demands on research managers.

The conferees couldn't have tackled a bigger topic. Research administration problems have multiplied concomitantly with the jump in industrial research and development spending from about $2-4 million nearly three decades ago to about $7 billion* this year. For a bargain $400 fee (which included meals, lodging, reference material, and recreational facilities), the visitors got a fresh slant on their jobs.

*Source: McGraw-Hill Publishing Co., Dept. of Economics.

Speeches, "clinical sessions" (where small groups hashed over common problems), panel discussions, and private conversation, set the conference pattern.

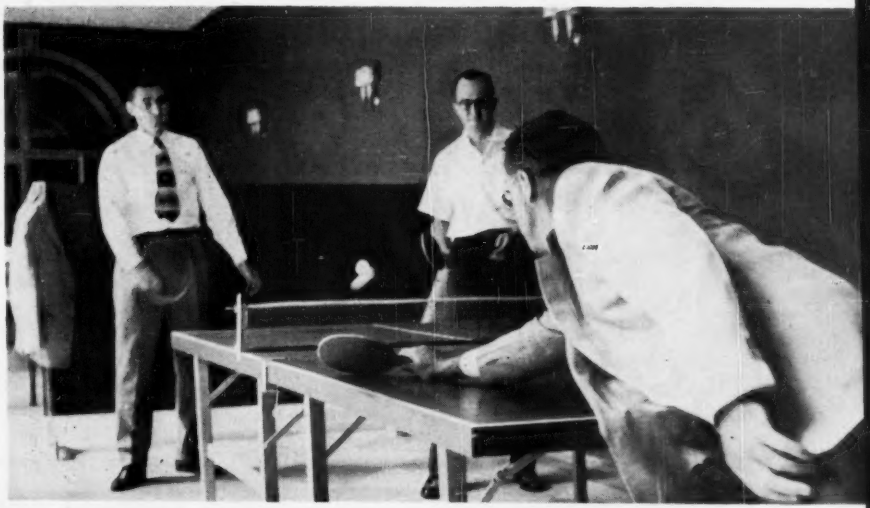
Research management conferences are becoming more popular—for example, American Management Assn.'s upcoming series at New York's Saranac Lake and Armour Research Foundation's forum (*CW, May 11, p. 86*).

At Columbia's conferences, the accent on research management is new this year. Previous conferences have covered budgeting and costs; planning, design and control of research operations; and human relations in research (*CW, June 18, '55, p. 69*).

In particular, this year, the sessions stressed the function of a research manager, his duties to his staff and to his management.

FORMAL MEETING: GE's Steele urges 'liberal rewards.'

COFFEE BREAK: Between talks, a refreshing pause.



RECREATION: In ping-pong, relaxing give-and-take.

on Their Jobs

Among the speakers: Melvin Thorner, University of Pennsylvania psychiatry professor, who discounted the often-heard generalization that researchers are relatively uninterested in monetary rewards. "Security-seeking people are likely to be less happy in research," avers Thorner, "where so many unpredictabilities and uncertainties exist." He suggests that "no important differences in income should exist between worker and intermediate manager, so that free thought will not be inhibited by status differentials," and advocates "rather liberal rewards to workers for research productivity, so that there is the theoretical possibility of a worker earning more than his manager." Citing the broadcasting industry, where entertainers frequently earn more than top executive personnel ("and the consequences have on the whole been

EYEING SCHEDULE: Conferees choose talks to hear.

GARDEN WALKS: For harried management, calm surroundings.

good"), Thorner states, "An income policy emphasizing security for research personnel is, in the long run, likely to be less successful than one emphasizing individual productivity."

Thorner suggests that the research manager "avoid getting in the way of a carefully selected staff of investigators—a poor manager can get in the way of progress very effectively."

In the same vein, Lowell Steele (*see cut, p. 71*), of the personnel division of General Electric's research laboratories, says: "No research manager who has a broad spectrum of technical responsibility can possibly cope effectively with the problem of applying his resources to important and fruitful areas without the assistance of other highly qualified men." He quotes a research manager who says, 'You should hire the best people you can find; then let them tell you what the problems are.' Steele, like Thorner, is for giving the scientist the best breaks possible. Steele thinks it is not only unfair but also undesirable to expect the scientist to "defend the relevance of his work to the needs of the business," doesn't think one can very well be "simultaneously immersed in the problems of nature and the problems of the company." It's up to the manager, he thinks, to "visualize the applicability of new scientific knowledge to the company, collaborate with the scientist in directing efforts to the most productive areas."

Waxing poetic—easy to do in the summery, forest-surrounded Arden House setting—Steele offered this "prayer" for a research manager:

"Give me the skill and judgment to guide and encourage those who need it.

"Give me the courage not to stifle those whose independence and curiosity drive them into the unknown.

"And give me the wisdom to distinguish one from the other."

In contrast, Randolph Major, scientific advisor to Merck & Co., Inc., stressed the point that research management has a duty to top management as well as to the laboratory staff. His capsulized idea of a research manager's functions:

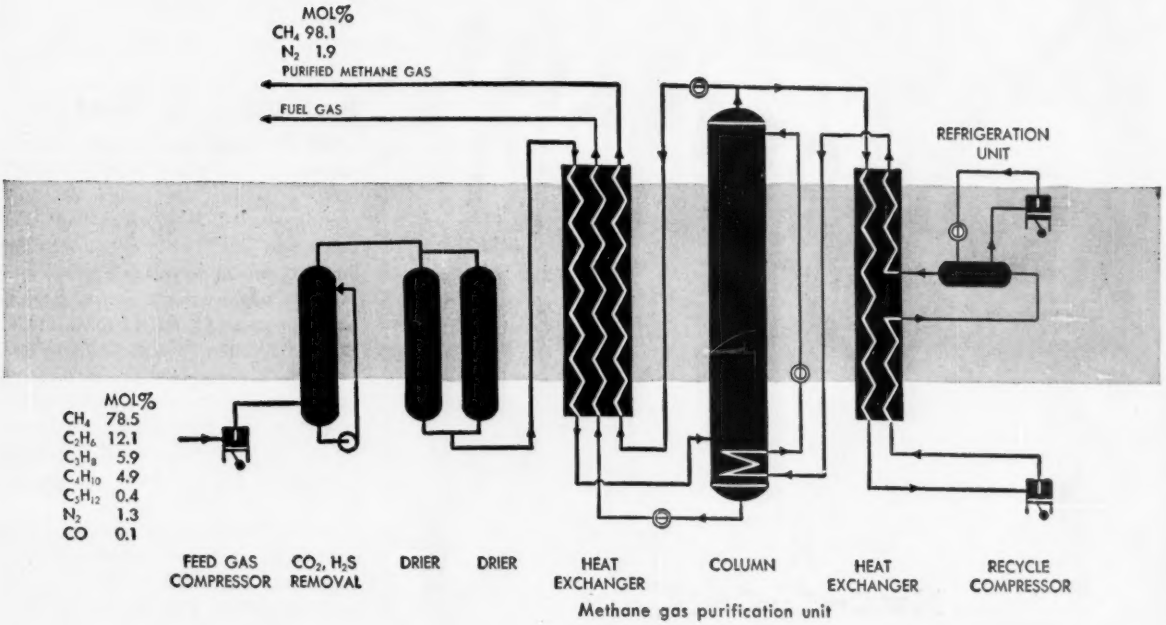
- To provide profits for the firm.
- To spark a research organization that works well as a team.
- To be a good planner and strategist.
- To have, and to exercise, good timing in research department operations. "It's important to know when to cut off a project, start a new one."
- To see that laboratories contain the best equipment to help solve problems as quickly, or more quickly, than their competitors.
- To see that the labs are staffed with "the most able and imaginative scientists of the day."
- To have good contacts with able scientists both here and abroad.
- To help with company public relations and advertising.

In a technical capacity, the research manager is also expected to improve products and processes, find new uses for products, turn up new ones.

Major also underscored the hard, cold fact that research directors are responsible to stockholders (*CW, Sept.*

practical approach to

METHANE PURIFICATION



Methane gas purification unit

In the production of chlorinated methane compounds and other chemicals based upon methane, the methane processed must be of ultra high purity. Air Products low-temperature processing plants—accepted as the most economical and practical approach—produce methane containing less than 100 p.p.m. of other hydrocarbons.

Air Products methane purification plants feature many cost-saving and special processing advantages:

- extremely high-purity methane, bone-dry and CO_2-free.
- valuable by-products—LPG, other heavy hydrocarbons, nitrogen.
- automatic control—requiring a minimum of labor.
- low power consumption.
- factory-assembled plants—assuring minimum installation expense.

Many chemical plants are already using Air Products low-temperature equipment. In addition to the production of ultra high-purity methane, Air Products units are being used for the production of oxygen, nitrogen, argon and hydrogen . . . as well as the processing of natural gas, carbon monoxide, deuterium, fluorine and helium.

Here at Air Products, we design, manufacture, erect and operate . . . package, tonnage and custom-built industrial gas separation, liquefaction and purification systems. No matter what your requirements, Air Products will find a way for you to acquire or lease low-temperature equipment on mutually convenient and beneficial terms. Your inquiry is invited. Air Products, Incorporated, P. O. Box 538, Allentown, Pa.

Air Products
...INCORPORATED

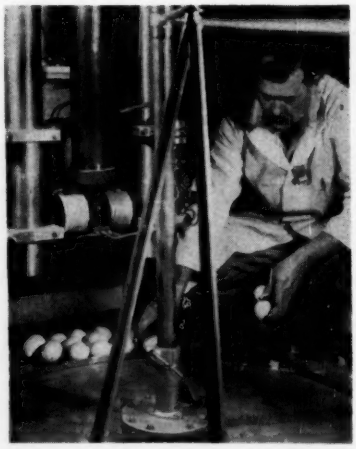
29, '56, p. 76), noted that many companies (e.g., Monsanto) include particular mention of research in company reports. Research, believes Major, can spell the difference between a successful year and a mediocre one. And research, the Arden House conferees were told, can be no better than research management makes it.

Radiation for Rent

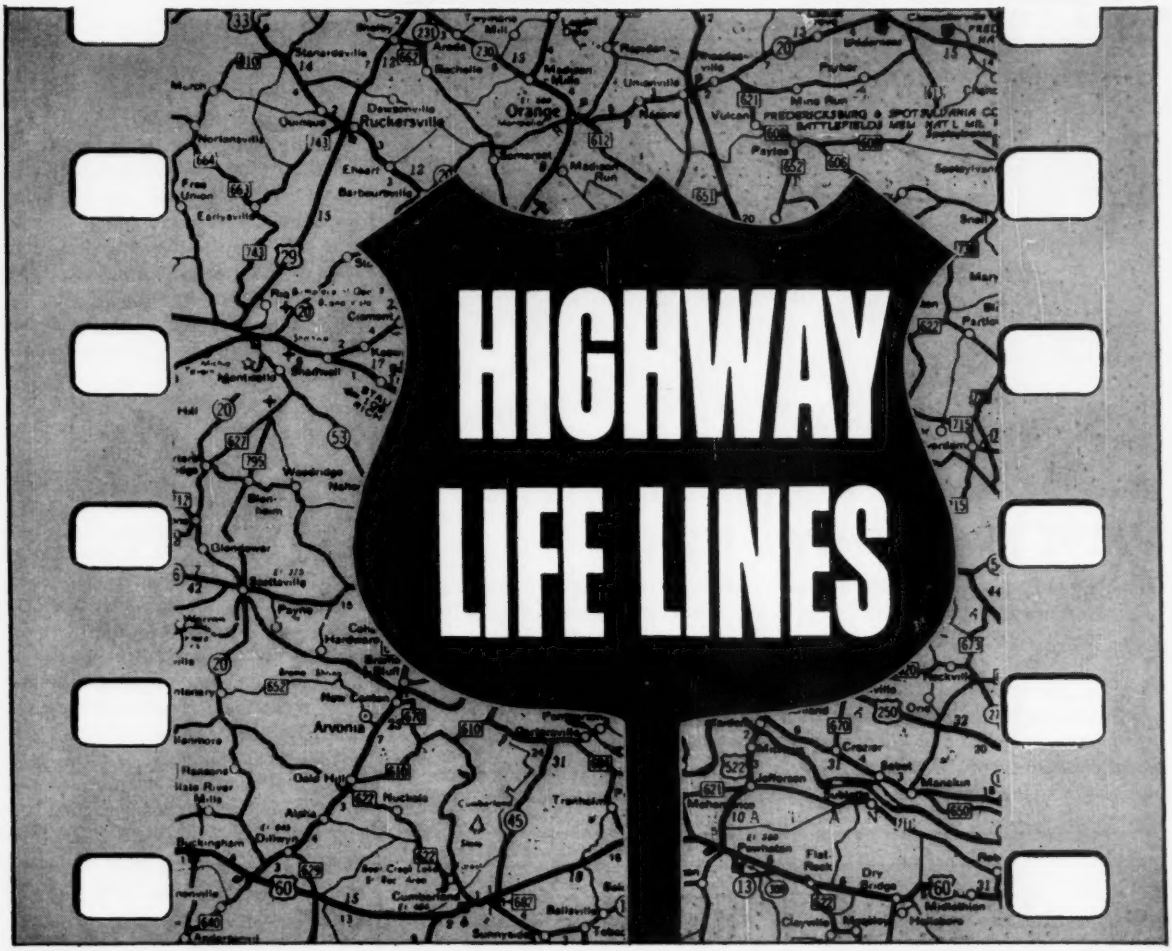
On the same premise that it's not necessary to buy a cow if you want milk, a lot of companies are now renting use of high-priced radiation equipment for their research. Latest firm to offer the service is Applied Radiation Corp. (Walnut Creek, Calif.), which is making an 11-mev. linear electron accelerator at its headquarters available for chemical research, food processing studies, etc. Arco's accelerator is the only industrial linear accelerator for rent (though Stanford University has extended a similar service on a limited basis).

Arco's entry brings to three the number of radiation equipment producers who offer facilities for radiation research. High Voltage Engineering Corp. (Burlington, Mass.) has set aside a 2-mev. Van de Graaff accelerator for the purpose; and General Electric (Milwaukee) offers a resonance transformer.

Since each firm features a different radiation source, contract radiation researchers have unprecedented leeway in their selection. And even gamma radiation is commercially



LEMON IRRADIATION: For longer storage life, an electronic jolt.



THIS MOVIE WAS MADE FOR MEN WHO WANT BETTER TRAFFIC PAINT

NARRATOR: Trying to determine how much to pay for traffic paint . . . That's what gives highway people headaches.

HIGHWAY COMMISSIONER: Oh, I don't know. Just give me the cheapest paint per gallon . . .

NARRATOR: Well, that's one way. But many municipal and state authorities have found better methods of evaluating paint.

This excerpt from the shooting script for "Highway Life Lines" sets the theme of this important new motion picture. Told against a background of colorful highway scenes from coast to coast, the story is that of the difference in paint performance and what you can reasonably expect from the paint you purchase.

Produced as a public service by Hercules Powder Company, "Highway Life Lines" provides the answer to such questions as how to select the right traffic paint, how to test it, how to modify formulations for your own specific requirements. The role of Parlon® chlorinated rubber in fortifying traffic paints to provide both fastest possible drying time and maximum durability is covered, incidentally, in less than one minute of screen time.

This sixteen-minute, 16-mm. film in full sound and color is now available for showings. If your regular traffic paint supplier has not yet shown you this film, you can secure a print by contacting any local Hercules sales office or writing to the address below:

Cellulose Products Department

HERCULES POWDER COMPANY

INCORPORATED

992 Market Street, Wilmington 99, Delaware

CR57-4

available (*CW, Oct. 20, '56, p. 68*) —at Budd Co.'s new Nuclear Systems Division in Philadelphia.

Arco charges $75/hour for its accelerator, less for larger-scale programs. It owns and operates the installation. Customers may plan, execute and evaluate their own research, with or without assistance from Arco. Or samples may be sent to Arco for irradiation, returned to the customer for evaluation. Both procedures are common.

Convinced there's a need for this service, Arco is expanding, building a new unit at Rockford, Ill., planning another installation in the New Jersey area for Eastern clients.

And business is picking up. Clients already include M. W. Kellogg (long-term study of effects of radiation on hydrocarbons); Stauffer (radiation catalysis of organic systems); Aerojet General Nucleonics (irradiation of fabricated plastic components of nuclear reactors); Richfield Oil (organic catalysis). Other firms or institutes, holding Quartermaster Corps contracts, are looking into such subjects as the effects of radiation on food nutritional value and odor, prolonging the storage life of fresh lemons, and the preservation of fresh onions.

Arco feels that its accelerator's deep penetration and uniform dose distributions with depth are chief attractions for its use in radiation research (*CW, Dec. 3, '55, p. 58*). Also, since the beam is pulsed, short-lived chemical reactions and other instantaneous effects can be studied.

High Voltage, on the other hand, feels that the reactions obtainable with pulsed current may differ from those obtainable with the constant current of its Van de Graaff. Its facilities are available for $50/hour (contracted for by the hour), plus added cost for special setups or technical consultants.

General Electric's resonance transformer (used commercially by GE to irradiate polyethylene tape) has also found a prominent place in radiation research.

With a full array of radiation sources available "for rent," moderate-size companies now have their best opportunity to explore radiation's uses. And accelerator makers are hoping that the "tenants" will wind up as purchasers.

HELPFUL ANSWERS TO CAUSTIC QUESTIONS

As a leading supplier of Caustic Soda, Columbia-Southern is asked many questions each month about this versatile "workhorse" alkali. While the answers probably are not completely new to every Caustic user, they do re-emphasize certain basic points that shouldn't be forgotten. We hope that you will find this series interesting and helpfully informative.

At what concentration is liquid Caustic Soda normally stored?

It is normally stored at a concentration of 50%, although during winter months provision must be made to maintain temperatures above 60°F. It is general practice to dilute shipments of 73% liquid Caustic Soda to 50% concentration for storage. To store at 73%, heated tanks with special linings are required.

How much Caustic Soda is produced along with Chlorine in the Electrolytic process?

For each pound of chlorine, approximately 1.1 pounds of Caustic Soda are produced.

How is solid and flake Caustic formed?

To obtain the anhydrous forms of Caustic Soda, 73% liquor is boiled in large cast iron "fusion pots," driving off the water and leaving Caustic in a molten state. For solid Caustic Soda, the melted Caustic is poured into steel drums and allowed to harden. Flake Caustic Soda is produced by freezing the melted Caustic on a water-cooled rotary drum called a "flaker," after which it is sized by screening and packed in metal drums for shipment.

What is the best way to dissolve solid Caustic Soda?

There are two prescribed methods. (1) Split the drum at the seam with a crowbar and remove the metal from around the solid Caustic cake. Roll the exposed cake into a dissolving tank that is depressed below floor level. (2) Perforate the drum with a pointed tool or axe. Hoist the drum into an elevated dissolving tank. For either method, do not add water until after the Caustic or drums have been placed in the tank.

What are some of the typical savings of customers who have changed from buying 50% to 73% Caustic liquor?

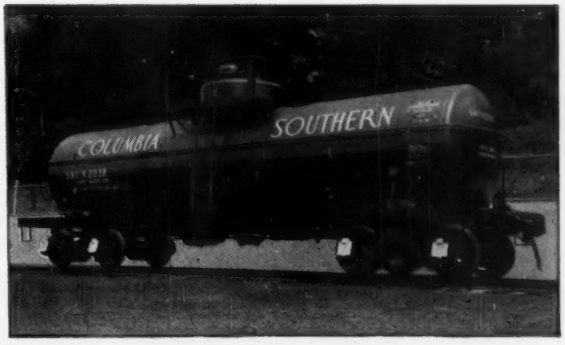
One user invested $2,120 in equipment needed to unload and dilute 73% liquor to 50% and saved $20,979 in five years. Another user saved $2,850 in the first year on an investment of $2,650—or a return of 108%. A third one—a very large user—had a 1003% return the first year on an investment of $3,500—or a total of $35,000.

How much is tank car handling reduced by purchasing 73% vs. 50% liquor?

Forty percent fewer cars need to be handled for the same tonnage. For example, a customer using 2,000 tons of Caustic, solid basis, would require the following shipments:

73% liquid	*Tons per car*	*No. cars*
8,000 gallon cars	42	47
10,000 gallon cars	53	38
50% liquid		
	Tons per car	*No. cars*
8,000 gallon cars	26	77
10,000 gallon cars	32	62

If you would like amplification of any of the answers on this page, or of any other answers previously presented, you are invited to write our Technical Service Department at no obligation to you whatsoever.



Did you know that you handle 40% fewer cars when you buy 73% Caustic liquor rather than 50%, to obtain the same Caustic content?

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA

DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Cleveland • Boston New York • St. Louis • Minneapolis • New Orleans • Dallas • Houston Pittsburgh • Philadelphia • San Francisco

IN CANADA: Standard Chemical Limited and its Commercial Chemicals Division

For Hospitals, $870,000-a-Day Specialties Tab

At New York City's Coliseum last week, salesmen of chemical specialties ranging from antibiotics to paint were busily cornering doctors attending American Medical Assn. meetings. No doctor was immune from the pitches, but the doctors the salesmen were really after (in an ethical way, of course) were those on committees that influence hospital supply-buying.

Hospitals as a group rank seventh in the U.S. in volume of purchases.

Much of these purchases are specialties. An estimated 7-10% of the hospitals' outgoing dollar (including wages, construction, equipment) is spent on supplies, mostly chemical. This is about $870,000 worth daily.

An idea of how these purchases break down is indicated by the figures on a 160-bed hospital in Wisconsin. This hospital spends about $1 million/year for all purposes, of which over 6% goes to chemical products, including $1,600 for paint, $5,800 for general housekeeping supplies, $42,600 for drugs and pharmaceuticals.

Generally speaking, hospital management is more interested in service and quality than in a low price—although some vendors say that they are becoming more price-conscious. They want—and often need—to be able to order at the last minute, get rush delivery. And they like a lot of technical advice.

Group Buying: Despite this demand for service, there has been a trend the past five years or so toward group buying. By this technique, a number of hospitals get together, set up a central buying agency, and get quantity discounts.

It is generally agreed among hos-

In surgical specialties, a specialized selling problem.

BLACK STAR

Recovery is good business

Consolidated's acid recovery process is typical of the services this company performs for Gulf Southwest Industry—it's good business for all concerned. By means of this service, black, corrosive sludge acid is converted from a disposal problem into an asset in the form of fresh, white, 99% sulphuric.

Consolidated is the big name in sulphuric acid for the Southwest. Five strategically located plants supply the petroleum, petrochemical and chemical industries concentrated in this area.

Whether your requirement is for new acid or for disposal and recovery of spent acid, you'll want to get all the data on point of shipment, price and delivery. You'll like doing business with Consolidated.

Stauffer CHEMICALS SINCE 1885 CCI

CONSOLIDATED CHEMICAL INDUSTRIES

DIVISION OF STAUFFER CHEMICAL COMPANY

640 Esperson Building
Houston 2, Texas

380 Madison Avenue
New York 17, N. Y.

pital administrators that prices in an entire area become lower when such a group is set up. Members are not obligated to buy through the group and generally take whichever price is lowest—the group price or one offered outside—though the group's superior bargaining power can usually get a price that's hard to match. Many manufacturers, however—most of whom don't like the groups because they lower prices and also mess up distribution arrangements—discount this, say that prices are the same everywhere. The majority of the makers claim that hospital people talk to each other too much for anybody to be able to offer more than one system of prices. Privately, many will admit, however, that price lists aren't always firm.

Whether in or out of a group, most hospitals have purchasing agents—usually low-paid, conscientious workers—who have but little power. They are often little more than order clerks, empowered to haggle price but not to specify brands. And more than 90% of hospitals order by brandnames.

The brands are usually picked by the heads of the using departments. For example, the executive housekeeper orders sanitary and maintenance supplies, the dietician buys the dishwashing compounds, the staff pharmacist specifies drugs (in many hospitals, doctors specify brands of pharmaceuticals for their own use), contractors specify brands of paint.

Buying Decision: Doctors often influence hospital buying decisions from both sides. Companies that sell to hospitals have found that a recommendation from a doctor is the best thing their salesmen can have in their brief cases. This applies not only to pharmaceuticals but also to soaps, disinfectants, other supplies. It isn't unusual among drugmakers and other medical specialty firms to keep one or more doctors on retainer (either openly or otherwise) to write and publish articles in support of products.

On the other hand, among pharmaceutical makers, the hospitals are considered more a means rather than an end in themselves. These firms often sell items at cost and make other concessions just to get the products into hospitals. Warner-Chilcott claims that its Gelusil is the most widely prescribed antacid in the U.S. and gives much of the credit to a program

Hospital Center of the U.S.

Chicago, home of the American Hospital Assn., is considered the hospital center of the U. S. CW interviewed purchasing people in a cross section of Chicago's 118 hospitals to find out how and why they bought. Briefly, here are their answers:

Veterans' Administration Hospital

Selling to the VA is a cut-and-dried affair in which the lowest bid gets the order. VA warehouses at three regional offices, but all orders and bids must be approved in Washington, D. C. (See p. 82.)

Cook County Hospital

Like most local government hospitals, County also buys from the lowest bidder. The same goes for state-operated hospitals. With 3,400 beds, Cook County is Chicago's largest hospital.

Holy Cross Hospital

This Catholic hospital buys through a centralized office set up by the church. There is an increasing trend for religious hospitals to buy this way. By placing bigger contracts, they get better prices, still can have materials delivered to the hospital. The group buys by specification, does some testing.

West Suburban Hospital

Buying is departmentalized—the pharmacist buys drugs, the superintendent of maintenance buys janitor supplies. This hospital buys on contract and tries to anticipate how prices will go. Doctors have some voice in drug purchases, but the hospital is careful not to order too much of anything specially requested by a doctor. West Suburban buys on reputation of the supplier rather than price.

Mercy Hospital

It buys all big items on contract. Mercy tests all new products, occasionally retests if something goes wrong. Using department influences purchases.

Wesley Memorial Hospital

Buys most items from makers, only a small amount from jobbers. Keeps a small inventory and finds it has a hefty storage problem because of the need to have the doctors' 'pet' products on hand.

Michael Reese Hospital

One of Chicago's largest (1,000 beds), this hospital deals mainly with manufacturers. Reese has developed its own specs on detergents and has tailored formulas built for it. The hospital buys on brandname basis, refuses substitutions. It gets three deliveries a day from three different firms supplying drugs. Reese cooperates with the Jewish Federation of Hospitals, uses its influence to help smaller members get good prices.

ANHYDROUS AMMONIA NITROGEN SOLUTIONS from STANDARD OIL

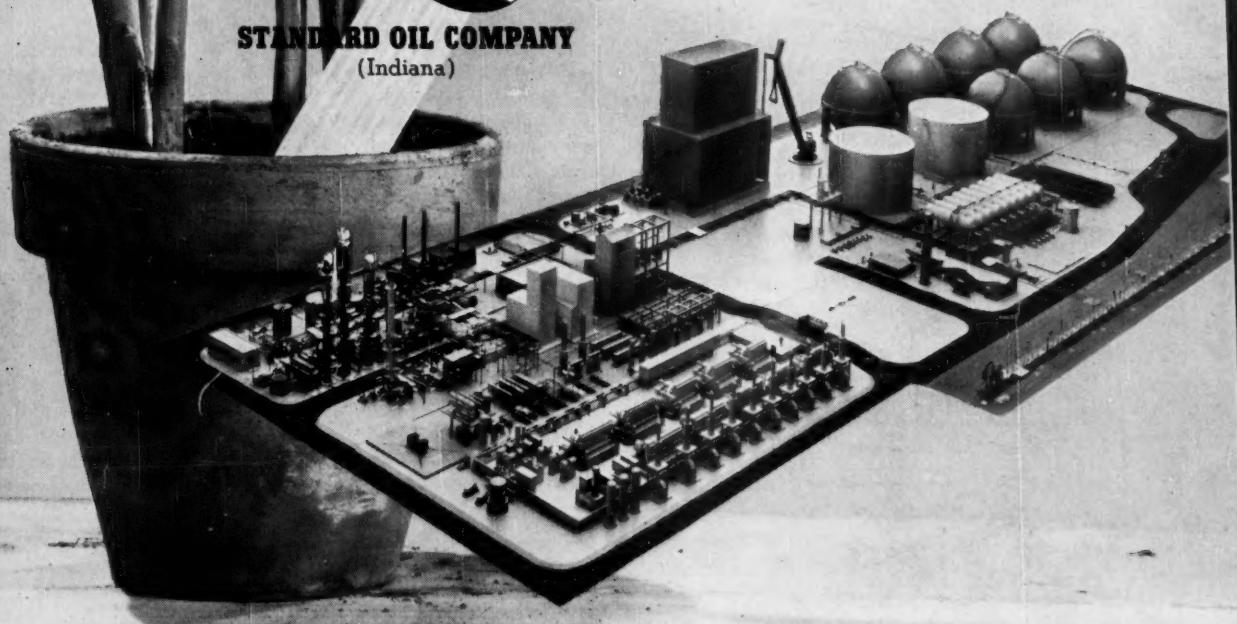
convenient plant location

The Standard Oil Anhydrous Ammonia and Nitrogen Solutions plant location beats them all for convenience *to you*. The plant is in the Hammond, Indiana, area. Its handy location means you can place an order and get delivery fast. You can control shipments better because there is a shorter distance for the shipment to travel. More than this, Standard's NH_3 and Nitrogen Solutions plant is in the midst of the biggest rail center in the world. You get fast, often one-line, hauling. Trucks can get to the plant from all directions by way of three U. S. Highways—12, 20 and 41.

Take advantage of this convenient plant location. Order Ammonia and Nitrogen Solutions from Standard. Call your local Standard Oil office in any of the 15 Midwest and Rocky Mountain states. Or write Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD

STANDARD OIL COMPANY
(Indiana)



of getting the product into as many hospitals as possible. There, it influences the ulcer patient, it influences internes (future doctors), and it influences staff doctors. Drug houses make a particular point to sell the hospital pharmacist. Not only does he influence hospital purchases; he also is generally more influential with doctors than is an ordinary retail pharmacist. Hospital pharmacists are often depended upon by doctors as sources of information about what is new.

Not all drugs are sold to hospitals at cost. Most firms grant a 15% discount if the hospital buys direct from the manufacturer in minimum quantities of $25-$100, depending on the company ($50 is usual). For smaller orders, the hospital usually finds it pays to buy from a wholesaler, who generally offers a straight 5% discount. Some pharmaceutical houses (e.g., Lilly) do not sell direct to hospitals.

A recent trend: hospitals are buying their pharmaceuticals from retail drugstores. In some cases, this amounts to a group purchasing plan, in which several hospitals buy from one drugstore, get a price based on the drugstore's quantity discount from the manufacturer. Some of the largest hospitals in the country purchase all or the bulk of their pharmaceuticals from retail drugstores, with significant price discounts.

Federal Case: The three biggest accounts in the hospital field are the Armed Forces, the U.S. Public Health Service, and the Veterans' Administration. VA buys with competitive bids, which are invited from all known suppliers by VA's central office in Washington. In some proprietaries, where there is only one supplier, VA makes a "term" contract—usually for one year—and hospitals order from the maker as supplies are needed. Each hospital has a therapeutic committee, before which the doctors lay their preferences and needs. If approved, the supplies are obtained locally in small quantities, for which each hospital has limited funds. Central procurement will be undertaken whenever these local preferences lead to a wider demand from a number of hospitals.

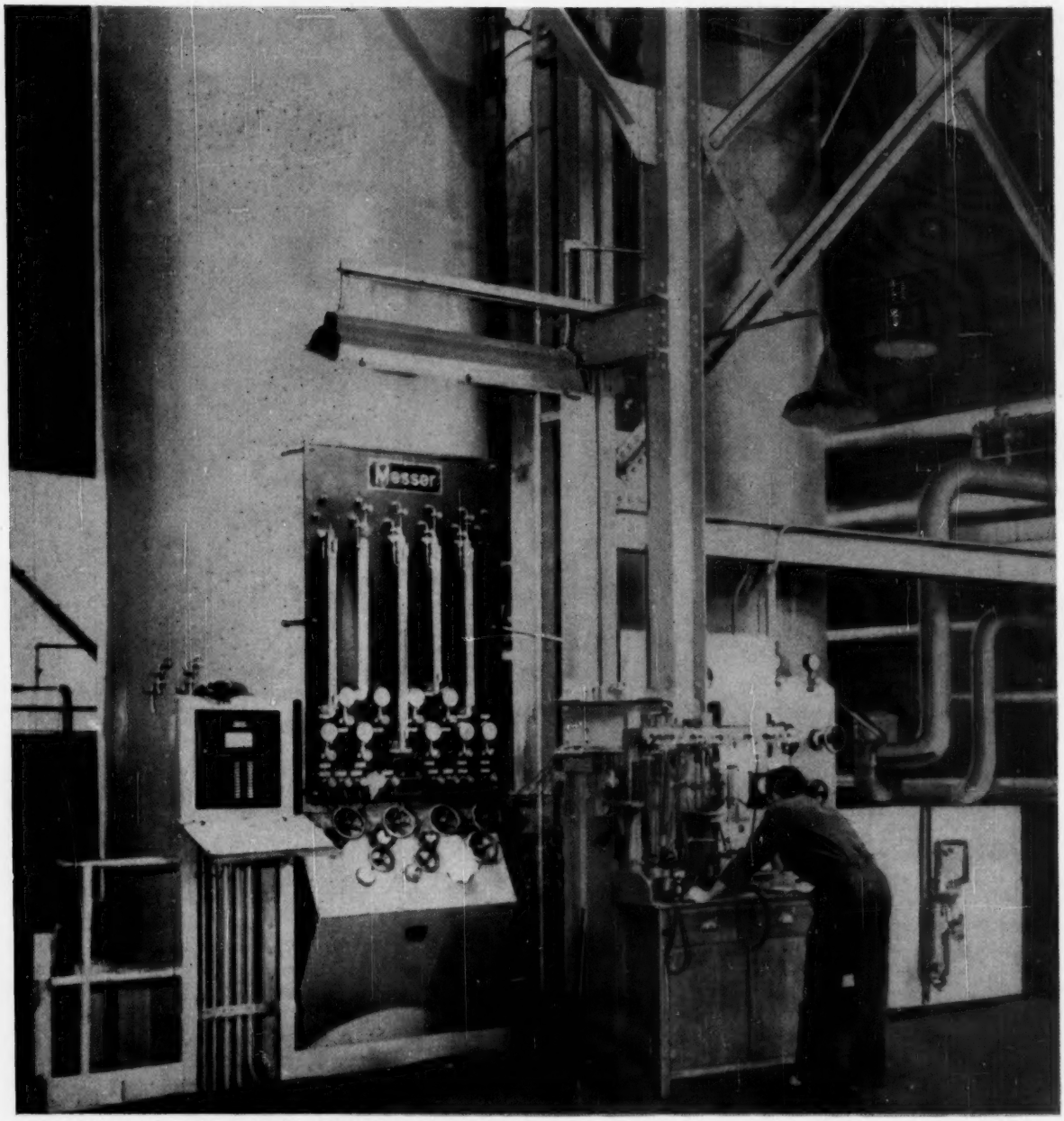
A specialties vendor wanting to do business with VA should—aside from being certain that he is aware of all bid invitations being issued in his line—contact either the hospital supply officers or the hospital pharmacists. He should be prepared to thoroughly present products and answer questions.

The Public Health Service buys in much the same way. To sell the Armed Forces, the vendor must contact the standardization committee of the individual service, make sure the committee includes him in its next invitation for bids. Military services do almost all buying with bids. The trick is to get the joint standardization committee to agree on a product for use by all the services. When a vendor becomes the standard supplier for any one of these groups, he's in the "big time."

Clean Up: As might be expected, selling drugs and surgical supplies is a much more specialized operation than selling sanitary supplies. Most detergent, paint, floor maintenance supply makers report that hospitals, which account for 11% of the sanitary supply market, differ little from other institutional and hotel markets. Hospitals are more fussy about how clean a product will get things, and more skeptical about manufacturers' claims. Although some testing laboratories have signed contracts with hospital groups to test products for them, most hospitals make no effort to test, attach minor importance to endorsements obtained from testing labs by the manufacturers.

Kickbacks: In spite of the lucrative market found in hospitals, selling techniques such as the kickback or rebate haven't been much in evidence (although there are reports that they are just beginning to become a problem). For one thing, there are usually too many buying influences present for the salesman to know whom to pay off. One problem that suppliers report has been growing lately is the request for contributions to hospitals' annual fund drives. (But this, some say, is no worse than the demands that they buy congratulatory ads for new restaurant customers.)

All in all, most suppliers agree that hospitals are an easy and lucrative market. Some statistics bear this out: hospitals use 2 million gal. of paint yearly, have 780 million sq. ft. of floor space to maintain, buy 26% of total drug purchases made each year in the U.S.



HOW YOU PROFIT FROM MESSER OXYGEN-NITROGEN EXPERIENCE IN THE CHEMICAL INDUSTRY

Successful Messer installations in chemical plants all over the world are *your* assurance that Messer experience and engineering can save you money, help you avoid costly mistakes.

EXAMPLES? Take the Messer plants engineered and produced for Pennsalt Chemicals Corporation, Wyandotte, Michigan.

The first of these plants, designed to produce bulk nitrogen, was installed in 1930. For 27 years it has been operating safely and efficiently. It runs for an entire year without shutdown—and in all those 27 years the shell has never been opened!

No wonder that when Pennsalt needed another plant in 1951, the job went to Messer.

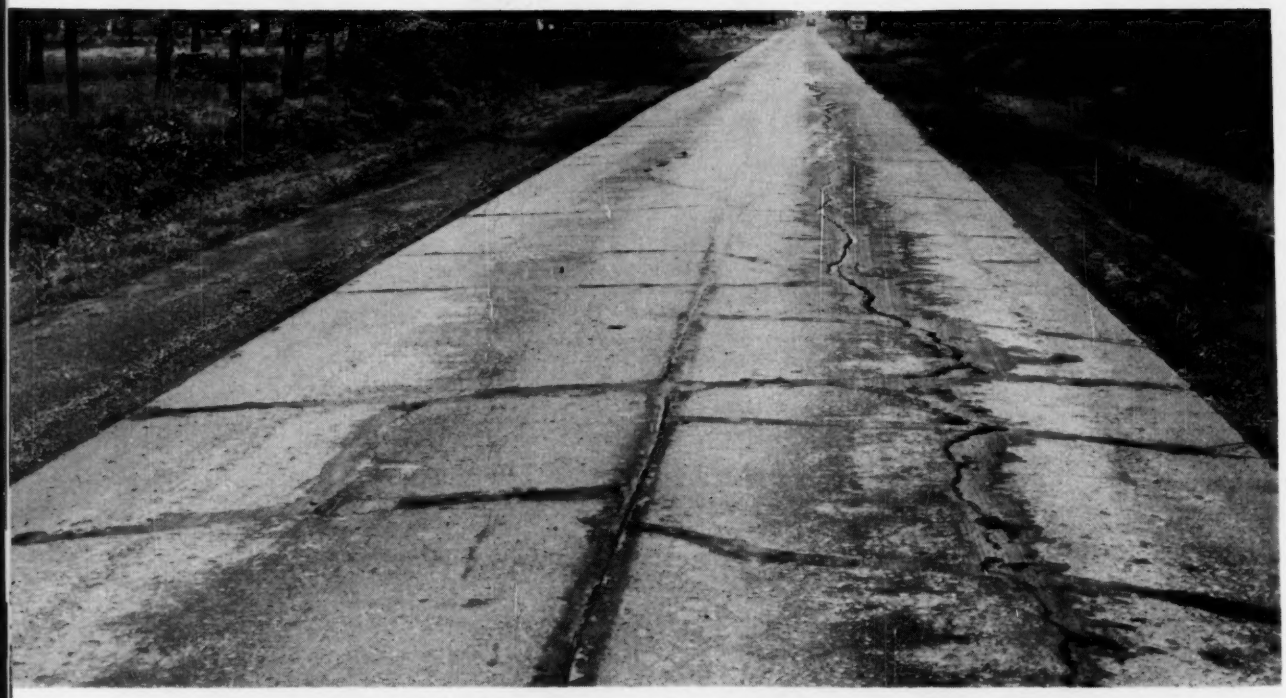
Messer's world-wide experience *means* something. It can mean something *important* to you—in money saved. Write or call American Messer Corporation, Chrysler Building, New York City.

"There Is No Substitute For Messer Experience"

Messer

AMERICAN MESSER CORPORATION

CHRYSLER BUILDING • NEW YORK CITY



Cracks caused by frost heave are the target of new chemical treatment.

Sulfite Waste Finds New Road to Profit

If experiments recently carried out by Lignosol Chemicals Ltd. and the Canadian National Railways live up to advance billings, two disparate groups, the nation's sulfite pulp producers and state highway officials, will have something to cheer about. A method of controlling frost heave has been found that uses what has hitherto been mostly a throwaway material—the spent sulfite liquor lignosulfonates.

Frost heave of roads is caused by the freezing of water brought up to the frost line from the ground-water level by capillary action. How much water is brought up (and how much damage is done to the road) depends on the distance from the frost line to the ground-water level, the grain size distribution of the soil, and permeability. The biggest headache occurs in silty soils where thick layers of ice form.

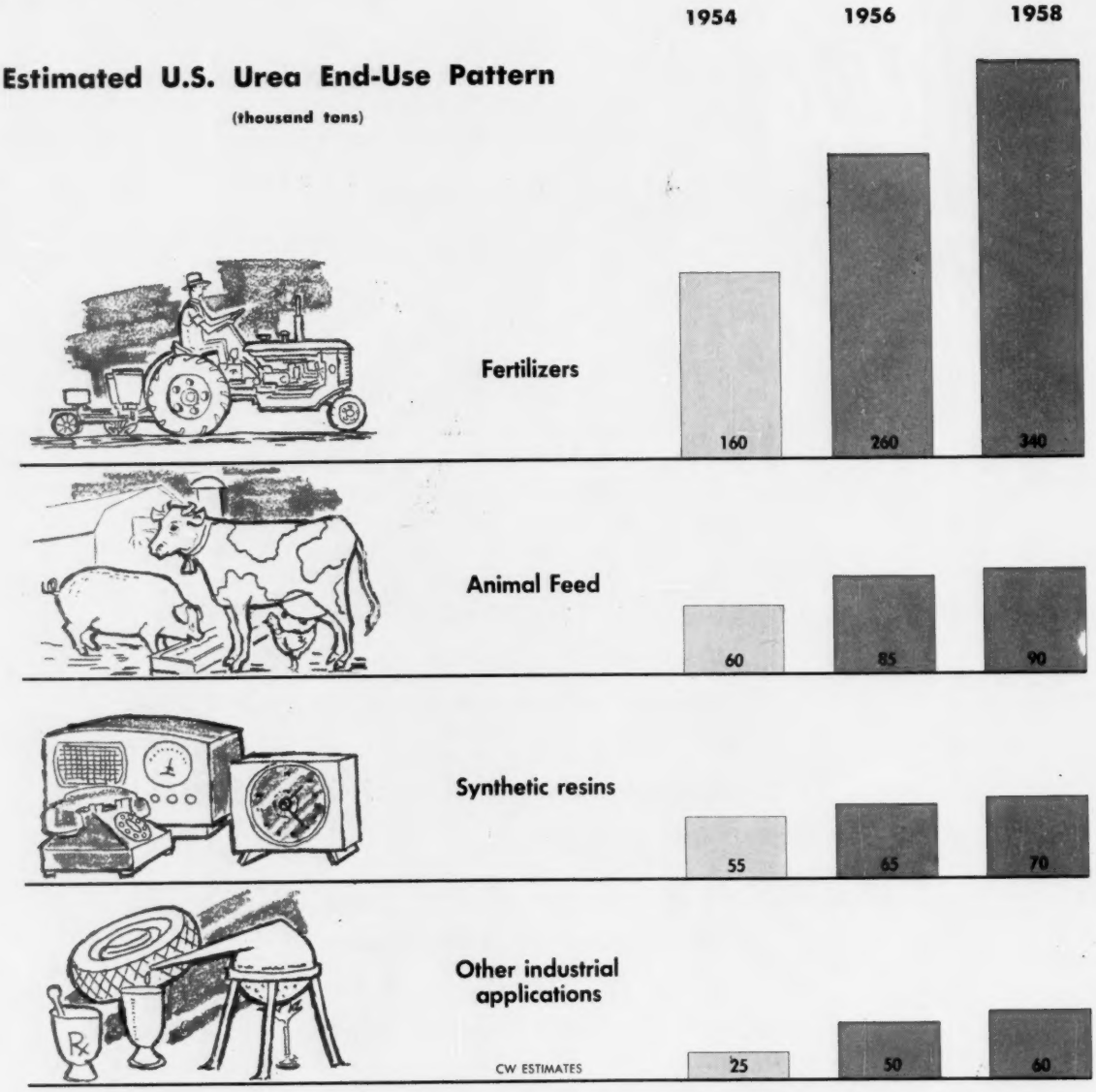
Railroads as well as highways suffer from frost heaves. It's frequently necessary during winter months to nave road crews place wooden shims between rails and ties in stretches of track up to 300 ft. long. Later, when frost heaves vanish, the shims are removed—an expensive business.

Working on data gleaned from initial experiments* at the University of Alberta, Lignosol and CNR injected 34 stretches of track with lignosulfate at 6-ft. intervals, first using a jack hammer to drive pipes 4 or 5 ft. into the ground outside the ties. Through these pipes, the dilute material was pumped until it broke through to the surface of the roadbed. By decreasing the permeability of the soil, frost heave —if not completely eliminated—was greatly reduced. Results also show one treatment will usually lick the problem.

Encouraged by the results with the rails, the Canadian company will go after road builders in earnest this summer. It figures that there's a big potential not only in repairing old roads but also in some of the big road-building projects under way in the U.S. The company says that 40 tons of the material per mile are necessary for preventing frost heaving on roads, and about 5 tons per mile for rail use (usually, only about 100 ft. per mile of rail need to be treated). At $20/ton f.o.b. Quebec City (tank-car lots), the company figures to do quite well if the application catches on. No total market figures have been sketched out, but the company says it figures the railroad potential in Canada is around 300,000 tons.

Although the company says it is more interested in having the material used on new roads than for upgrading older roads, the major application will undoubtedly be for the latter. The new highway program doesn't figure to be much of a market; if a potential frost-heave problem becomes apparent, engineers will call for roadbeds deep enough to eliminate the danger. But, even excluding superhighway construction, road building could take a big bite of the 1.5 million tons of waste lignosulfate to be produced this year in the U.S.—if the new method proves technically worthwhile and can be economically applied.

*Similar experiments have had varying success in Scandanavia and more recently in Germany. Main problem is obtaining good reproducible results. Getting a good dispersion is still a problem.



Urea: Heading for a Record Year in '58?

Urea demand—from fertilizers, animal feed, synthetic resins, and other industrial applications—will, by next year, tower close to 560,000 tons. That tops, by at least 100,000 tons, last year's brisk consumption, literally dwarfs pre-Korean use of some 155,000 tons/year.

Few chemical commodities can boast a 270% increase in demand in less than eight years, and urea requirements are still spiraling. Capacity is increasing apace. This year, for example, Spencer Chemical is coming onstream with a new 10,000-tons/year urea installation (at Vicksburg, Miss.). Spencer's addition will boost total U. S. capacity to an all-time high of about 640,000 tons, but the industry, often hampered by production problems, rarely operates at 100% capacity throughout the year; a "normal" operation rate is 80-85%.

In late '58 or early '59, North American Cyanamid of Canada (a subsidiary of American Cyanamid) will start up a whopping 66,000-tons/year plant (at Hamilton, Ont.). Capacity of that plant can well be added to U. S. figures, since most of the material will be headed toward urea-hungry U. S. markets.

And chances are more urea will be made in the U. S.; at least two major chemical companies are weighing the economics of going into urea production, while one maker, though reluctant to be identified, is contemplating a major capacity increase.

Slot wedges extruded from G-E Textolite 11580 insulate these motor windings and keep them in place under extremely high operating temperatures and currents. Developed by G-E chemical research, Textolite 11580 is 50% stronger and lighter than aluminum, has excellent dielectric properties.

New G-E Plastic insulates electric motors, permits higher ratings in smaller frames

From glass fiber and polyester resin, General Electric chemical research has developed a hard, extrudable plastic that is stronger and lighter than most metals, yet has unusual electrical insulating properties.

The material is called G-E Textolite® 11580. Although it was developed primarily as an insulating material, its light weight and tough, flexible strength can be used in a variety of structural components.

Electrical equipment manufacturers are using G-E Textolite 11580 as Class "B" insulation in motors, transformers, switchgear and electronic assemblies. G-E Textolite 11580 is acid- and solvent-resistant, will withstand temperatures as high as 275°F. indefinitely. By means of a unique manufacturing process developed by G.E., Textolite 11580 may be extruded in a wide variety of shapes.

As an insulating material, G-E Textolite 11580 joins such other General Electric chemical discoveries as mica mat flexible insulating tape, Irrathene® irradiated polyethylene and mycalex heat resistant molded insulation. For product information on G-E Textolite 11580, write Dept. LPD, CHEMICAL and METALLURGICAL DIVISION, General Electric Company, Coshocton, Ohio.

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GENERAL ELECTRIC

Urea Supply Continues to Climb
(thousand tons)

Year	U.S. Production	Imports	Exports	Total Supply
1954	230	+73	−3	300
'56	419	+69	−28	460
'58	545	+35	−20	560

Estimated Urea Capacity
(thousand tons)

These companies . . .	can make this much . . .	at these locations:
Allied	80 110	South Point, O. La Platte, Neb.
American Cyanamid	66*	Hamilton, Can.
Deere	95	Pryor, Okla.
Du Pont	190	Belle, W. Va.
Grace	55	Woodstock, Tenn.
Shell	45	Ventura, Calif.
Sohio	45	Lima, O.
Southern Nitrogen	10	Savannah, Ga.
Spencer	10	Vicksburg, Miss.

*Due onstream late '58 or early '59.

Why the keen interest in urea? Demand, since the early '50s, has almost consistently lagged behind supply. The spread has often been wide enough to cause consumers to look to imports from Europe.

Next year, though, production plus net imports should match the anticipated 560,000-ton demand in the U. S. (*see table, above*). All indications point to a total output in this country of some 545,000 tons. Compare that with last year's 418,000 production† or with '50's scant 150,000 tons (estimated).

Urea Import Impact: Last year, the Dept. of Commerce reported urea imports at about 69,000 tons. This was somewhat below the peak year '53 high of close to 88,000 but a big jump from the 13,700 tons imported during '50. Such European material found a ready market in the U. S. until about four years ago. The downtrend in imports, which began in '53, clearly reflects rapidly growing domestic production.

It's almost certain that urea imports will continue to suffer as U. S. makers eliminate urea production kinks that have often precluded full-capacity output. That happy stage may already have been reached, however. Bolstering the belief: monthly urea production figures early this year indicate that U. S. installations are operating at almost top rate.

Export Consideration: In viewing the over-all supply-demand picture of urea, exports must be considered. But there appears to be wide disagreement on exactly how much urea is shipped out of the country. Estimates for last year, for instance, range from a conservative 10,000 tons, to as much as 50,000 (*CW* splits the difference, estimates '56 exports at about 28-30,000 tons). The uncertainty considerably alters estimates of urea's end-use pattern, especially the fertilizer category, since most of the exported material winds up in out-of-country fertilizer outlets.

The fertilizer industry—in the U. S. as in Europe—is urea's top outlet—and it's rapidly expanding. The big surge toward urea as a nitrogen source is a comparatively recent development, though, and did not really begin until fertilizers in solution forms began to be accepted. Today, about 62% of all

†In '56 first total annual production of urea was reported by the government.

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Aluminum Paints, Brake Lining Compounds, Concrete Curing Compounds, Concrete Paints, Deck Enamels, Floor Paints, Gasket Stock—Oil Resistant, Gasoline and Grease-Proof Coatings, Gold Lacquers, Government Specification Coatings, Metal Coatings, Paper and Hardboard Impregnants, Pipe Coatings, Porch Enamels, Primers, Printing Inks, Shoe Soles—Cork Filled, Shoe Sole Compounds—GR-S, Slab Sole Stock, Traffic Paints

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nitrogen mixtures are applied in solution forms, and urea is second only to ammonia as a prime nitrogen source in these mixtures. The anticipated continuing growth of solution sales is one of the chief lures for potential urea producers.

During '58, for example, about 340,000 tons of urea, or about 61% of total available supply (production plus net imports), may be consumed by the fertilizer industry. Underscoring growth of the urea take: in '54, some 160,000 tons, or aproximately 54% of the available supply, filtered into fertilization uses.

Add Ag Use: Also in the agricultural field, animal feeds are an important urea outlet. It's used as a supplement source of protein. The protein angle puts urea in direct competition with soybean and cottonseed meals, but the latter will continue to hold the edge over urea for a number of reasons, including price and availability.

A heavy crop of various oilseeds will usually cause animal feed formulators to shy away from urea; and the converse is also true. Poor oilseed years will perk urea sales to feed makers.

Another obstacle urea must clear in cracking the feed-supplement business is toxicity. When ingested in large amounts, urea has a toxic effect on animals. Quantitative restrictions imposed by the American Feed Manufacturers Assn. limit use of urea in feeds to one-third the protein available in a mixed feed. The other two-thirds is made up by oilseed meals, such as linseed, cottonseed or soybean.

Despite some industry divergence of opinion, animal feed supplements are a lucrative urea market. AFMA reports of such urea consumption, according to consensus of many urea producers, often run a little high. But there's no disagreement in that urea use is growing heartily (*see table*).

Industrial Forging: Perhaps the biggest industrial application of urea is as a basic component in the manufacture of thermosetting resins. These resins are important ingredients in molds, coatings and adhesives.

Important among the ultimate urea resin end-use outlets are radio and television closures, fabric treatment, bonding of wood veneer into plywood.

In '56, resins consumed some 65,000 tons of urea, and a measure of their potential growth is a widely accepted estimate that such urea use in '58 will tally to at least 75,000 tons. Comparison: in '50, urea usage for synthetic resin production barely touched an estimated 47,000 tons.

There are three types of urea resins: urea-formaldehyde, urea-furfural-formaldehyde and urea-resorcinol. The urea-formaldehyde resins, of course, are the top urea users.

Most difficult area in which to pinpoint urea consumption is industrial applications other than synthetic resins, since no official government figures are available. Market observers aren't averse to guessing the amount of urea flowing into such uses, and the estimates range all over the lot. One pegs last year's consumption at about 25,000 tons; another is convinced that use hit close to 65,000 tons. Most though, lean toward a compromise 50,000 tons, envision a further 10,000-ton jump in '58 use. Why the varying estimates? Captive consumption data is jealously guarded by most of the major urea producers. Du Pont, only producer of sulfamic acid, for one, is understandably mum about how much urea is so consumed, but chances are that sulfamic use of urea is considerable—and it's growing.

The acid currently has a multiplicity of applications, including use as a softening agent for paper and textiles, a weed and brush killer, and for metal cleaning. One "guesstimate" is that sulfamic will take some 10,000 tons of urea this year.

But urea's outlets are even more varied than sulfamic's. Next year, dyes and pigments may consume as much as 2,000 tons of urea, while synthetic detergents, explosives, drugs and pharmaceuticals, beer and liquor fermentation will make up the balance of '58's estimated 60,000-ton consumption of urea in these industrial aplications.

Pace of urea demand in all four major outlet categories—fertilizers, animal feeds, synthetic resins, and other industrials—should keep present and potential producers happy. The trend toward greater use of nitrogen solutions practically guarantees a continuing major growth for urea. Add the certain hypo of other uses that are not determined by seasonal requirements, and the market outlook for urea can be easily summed up: supply high, demand higher.

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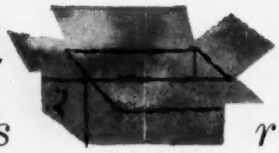
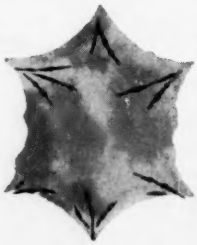
In **paper,**  *by keeping felts clean, Nopco detergents reduce shutdowns for cleaning equipment... in* **textiles,**  *they add important economies in raw wool scouring, wool and worsted processing, continuous boil-off operations... makers of* **cleansers**  *find in Nopco detergents a wide range of properties to produce everything from car washes to bubble baths... in* **tanneries,** *a*  *specially developed Nopco detergent removes excess grease from hides, produces better leather.*

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For complete information see Chemical Materials Catalogue—Pages 373-376

Market Newsletter

CHEMICAL WEEK
June 22, 1957

Further verification of the easing market for selenium (*CW Market Newsletter, June 15*) is the third-quarter suspension of export quota limitations by the Bureau of Foreign Commerce. In a series of announcements on export controls late last week, BFC officially noted that relaxations on some selenium materials were possible because of an "improved supply situation."

Effective immediately, these selenium commodities are removed from quantitative quota restrictions: metal, ferroselenium, powder, selenium-containing chemical compounds (including pigments), and acid.

In the second quarter, exports of selenium materials were limited to 30,000 lbs. (selenium content).

Lead and lead oxides prices took another battering last week. For the metal, it's the third cut in less than two months. Latest reduction —1¢/lb.—is being posted by most major custom smelters, sets the new tag at 14¢/lb. (New York) and 13.8¢ (St. Louis).

A number of reasons are being advanced for the lead cuts, including the noticeable lag in consumer demand and growing metal stocks at producers' levels. But the biggest is said to be industry's disappointment in the government's metals aid programs. Criticized particularly is the Agricultural Dept.'s reinstituted and revised program of bartering agricultural products for lead and zinc. "Too restrictive," says the trade, "to be of any real help."

•

Also suffering in the wake of the lead cut are the important pigment materials, dry red lead, litharge and orange mineral. The latest 1¢/lb. reductions bring c.l. prices on the red lead down to 16¼¢; litharge, to 15¾¢; orange mineral, to 19.6¢/lb. Significantly, prices just a year ago were 19¢, 18¢ and 22.6¢/lb., respectively.

•

"Competitive conditions" is the reason advanced for newly posted lower contract prices on high-grade muriate potash for ag uses. United States Potash Co., which last month issued a potash price list for the '57-'58 fertilizer year, is now circulating a revised list with cuts up to $1.25/ton from the earlier schedule.

The company's new bulk price (for June shipment) is 34¢ K_2O unit, or $21.25/ton, contrasted with the previously quoted 36¢/K_2O unit, or $22.50/ton.

Next month's shipment tag goes up to 34½¢/unit; Aug. '57 through May '58, price per unit will be 35¢.

•

More cuprous chloride is being made available. Newly completed at Berkeley Chemical's installation (Berkeley Heights, N.J.) are

facilities that up the company's cuprous capacity 100%. The firm is mum on specific capacity figures, but the increase in capability puts Berkeley among the top U.S. producers.

Demand for the chloride has leveled off some in the past few months, but anticipated growth in its use as an important catalyst for production of synthetic fibers and dyestuffs is behind the company's engineering of the new plant so that, with "modest changes and additions, production can again be doubled should requirements justify it." U.S. demand for the material today runs about 2-3 million lbs./year.

•

Two new defense-essential products are now being made by American Potash & Chemical. The items: lithium perchlorate and lithium nitrate—both for use in high-energy fuels applications, including rockets and missiles.

The lithium derivatives are described as oxidants to provide oxygen for solid propellents and, as oxidants, may also be used in flares and other pyrotechnics.

•

The U.S. should have few worries about phosphate rock sources. Exploration work by San Francisco Chemical for Stauffer Chemical at the latter's Hot Springs, Idaho, phosphate rock property indicates a "multi-million-ton" ore body. The Stauffer reserves include at least a million tons of easily minable high-grade rock for economic manufacture of superphosphates, plus a "vast quantity" of lower-grade phosphate shales that could be used as raw material for electric-furnace production of elemental phosphorus.

Stauffer doesn't plan immediate exploitation of the new ore body, though, says it already has "substantial reserves of phosphate rock in other properties."

SELECTED PRICE CHANGES — WEEK ENDING JUNE 17, 1957

	Change	New Price
UP		
Cottonseed oil, crude, tanks, Valley	$0.00125	$0.13125
Tallow, edible, tanks, dlvd.	0.005	0.12
DOWN		
Lead, metal, prime, pigs, N. Y.	0.01	0.14
Litharge, coml., powd., bbls., c.l., wks., frt. equald.	0.01	0.16
Orange mineral, American, bbls., l.c.l., wks.	0.01	0.1625
Red lead, 95% lead oxide or less, bbls., c.l., wks., frt. equald.	0.01	0.195
Silver cyanide, fib. dms., 2,500-oz. lots, per oz.	0.00625	0.86375

All prices per pound unless quantity is stated.

COMPARATIVE ETHYLENE COSTS

	Stark Process*	Steam Pyrolysis Process*	Thermal Cracking Process†	
Feed material	**Heavy fuel oil**	**Heavy naphtha**	**Refinery off-gas**	*The low capacity of this set-up may appeal to some producers.*
Production				
Annual	37,600,000 lbs.	75,000,000 lbs.	200,000,000 lbs.	
Daily	103,000 lbs.	205,400 lbs.	548,000 lbs.	
Capital investment	$3,300,000	$5,350,000	$9,900,000	*Assumes that a manufactured-gas plant now on stand-by is available for use.*
Daily expenses				
Feed	$8,950	$13,400	$11,320	
Direct operating charges	3,337	4,037	6,005	
Indirect charges	2,620	2,416	6,737	*Includes rent for gas plant of $1,100/day.*
Total	$14,907	$19,853	$24,062	
Cost per pound of ethylene *(before credits)*	14.49¢	9.67¢	4.32¢	
By-product credits *(per day)*				
Tar	$5,885 (@11¢/gal.)	-----	-----	*By-product credits are essential to Stark process economics.*
Residual gas	2,090 (@50¢/MM Btu.)	$1,761 (@50¢/MM Btu.)	$2,150 (@15¢/MM Btu.)	
Propylene	1,250	2,460	5,240 (@2¢/lb.)	
Purified products				
Hydrocarbons	2,191	1,929	-----	
Aromatics	2,203	-----	-----	
Mixed hydrocarbons and aromatics	-----	-----	1,000	
Raw gasoline	-----	4,920	-----	
Total credits	$13,619	$11,070	$8,390	
Net cost	$1,288	$8,863	$15,672	
Cost per pound of ethylene *(after credits)*	1.25¢	4.34¢	2.86¢	*This is rock-bottom cost, assuming most favorable circumstances.*

*Stark's figures; †Adapted by CW from previously published data.

Gas Plant: Key to Cut-Rate Ethylene

LOOKING for a small-size facility that can produce ethylene for 1¼¢/lb.? The figures in the table above indicate that such an operation is feasible—provided a combination of favorable circumstances are available. The key: utilization of an existing manufactured-gas plant to produce ethylene from heavy oil.

The gas-plant route to ethylene is the brainchild of Virgil Stark, president of North American Utility & Construction Corp. (New York). Based on his patent (U.S. 2,714,060) covering the production of utility gas and petroleum by-products from oil gas, the process employs conventional processing techniques.

The process in brief: oil gas is produced in the manufactured-gas plant by vapor-phase cracking of heavy residual oils (bunker C or other residuum crude). Conventional oil gas generators permit cracking with steam (to lower carbon deposits) without catalyst, can be heated by burning heavy oil, tar or gas. Oil gas analysis can be regulated by adjustment of operating conditions, particularly the cracking temperature (750-850 C).

After separation of by-product tar in the gas plant, the oil gas is subjected to selective recovery to extract ethylene and relatively pure cuts of propylene, butylene-butadiene, C_3-C_4 LPG, cyclopentadiene, benzene and toluene. The residual gas may be enriched to fuel-gas

heat content by blending with selected higher hydrocarbons.

Likeliest location for a Stark process plant: northeastern U.S., where ethylene produced by thermal cracking of refinery off-gas is not plentiful.

Question of Size: Though small-size ethylene plants are the exception rather than the rule (experienced ethylene plant builder Stone & Webster says 100 million lbs./year is minimum capacity for economic operation using refinery gas), limited production might appeal to companies that have captive uses for the ethylene, ready markets for the by-products. In any event, the size of the available gas plant (it may be larger than the 37-million-lbs./year plant on which the table is based) is a controlling factor.

Though the 200-million-lbs./year thermal cracking plant selected for comparison with Stark's proposed system is a larger-than-average installation, it's more indicative of domestic ethylene production than the steam pyrolysis example chosen by Stark. Steam pyrolysis is more common in Europe, where heavy naphtha starting materials are more plentiful than refinery gas. But chances are that few U.S. producers would choose that route.

To date, the only U.S. application of the heavy oil-to-oil gas-to-ethylene route is the one that Allied Chemical's Semet-Solvay Division has employed since Jan. '54 at Tonawanda, N.Y. In an ideal position to use the method developed by its own engineering group, Semet-Solvay consumes the ethylene in its 20-million-lbs./year polyethylene operation at the same site, is already engaged in fuel gas production at its nearby Buffalo coke ovens. And sister division Barrett is an obvious outlet for by-product tar.

Keeping Costs Down: One thing a prospective user can't afford to overlook is the combination of factors that must be just right in order to produce ethylene for 1¼ ¢/lb.

First, there's the matter of leasing a suitable gas plant and constructing an adjoining recovery plant for the separation of valuable hydrocarbons, aromatics and residual gas. Stark's estimate allows $3.3 million for recovery facilities, $400,000 annual rental for the gas plant. And since utility companies are required by law to keep gas manufacturing facilities on stand-

by, the rental plan offers an attractive alternative to letting the plant lie idle for the greater part of the year.

Disposal of by-product gas is the second important consideration. Produced as residual gas with a heat content of 815 Btu./cu.ft., it's interchangeable—after enrichment to 1,000 Btu./cu. ft.—with natural gas and could be used as stand-by fuel. But gas prices vary according to location (e.g., natural gas cost to distributors runs about 35¢/MM Btu. in New York, comes closer to Stark's 50¢/MM Btu.-estimate in New England), and actual gas credit may fall short of the allowance made in the table.

Another important consideration of the gas disposal problem is the overall relationship between the ethylene producer, the utility company and the relevant public utility regulatory commission.

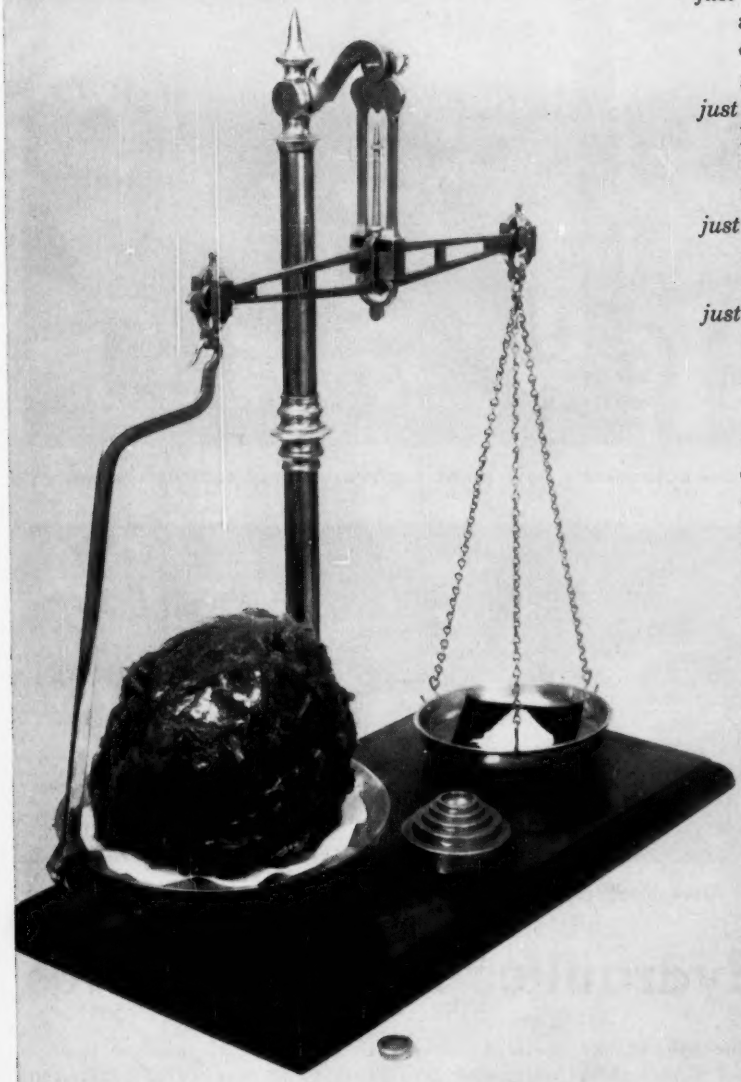
Tar credit, too, must bear a substantial share of production costs if the 1¼¢/lb. price of ethylene is to be realized. Stark credits tar at 11¢/gal. in his estimate, sees a ready market for this by-product in the government's expanding highway construction program. However, some tar experts claim that the low-melting, highly aromatic tar produced by gas plants isn't up to the quality required for road building. It's their opinion that gas plant tar is better suited as feed to carbon black production.

The carbon black outlet could readily absorb the amount of tar turned out, but the tar credit would shrink from 11¢ to 8¢/gal. Net effect on the cost of producing ethylene: a rise from 1¼¢ to 2⅝¢/lb.

Of course, there may be other means of utilizing by-products to offset production costs. For example, Petrocarb Equipment Inc. (New York) is also interested in the gas-plant approach to ethylene production, feels that best results may be obtained by integrating the gas plant with a polyethylene installation and using the by-product gas internally. Petrocarb, however, doesn't completely rule out the sale of gas, concedes that it would be feasible to tie in with a utility, sell the gas for "peak shaving."

In any case, it's clear that the gas-plant route is not a panacea. But for ethylene users in areas where conditions are right, the Stark process could prove a shortcut to low-cost ethylene.

THE THINGS YOU CAN DO WITH A LITTLE LITHIUM



just one pound of lithium hydroxide is all that's needed to make one hundred pounds of multi-purpose grease.

just one pound of finely divided metallic lithium is catalyst enough for one thousand pounds of synthetic rubber.

just one pound of metallic lithium degasifies one thousand pounds of molten copper.

just one pound of lithium hydride releases fifty cubic feet of hydrogen.

It's not so much *the things you can do with lithium* . . . as it is *how little lithium you need to do them.* Present day industrial applications require such small quantities of the metal that today's proven reserves are more than adequate to take care of all foreseeable needs. And even if lithium uses expand faster than their present amazing rate, it's reassuring to note that Foote Mineral, with the largest operating deposits in the United States, is still proving new reserves every day.

If you're interested in how a little of the right lithium chemical might go a long way in improving your operations, we'll be happy to discuss lithium chemistry with you at your convenience. Or, write now for a brief working rundown in "The Physical and Chemical Properties of Lithium Compounds" to Foote Mineral Company, 460 Eighteen West Chelten Building, Philadelphia 44, Penna.

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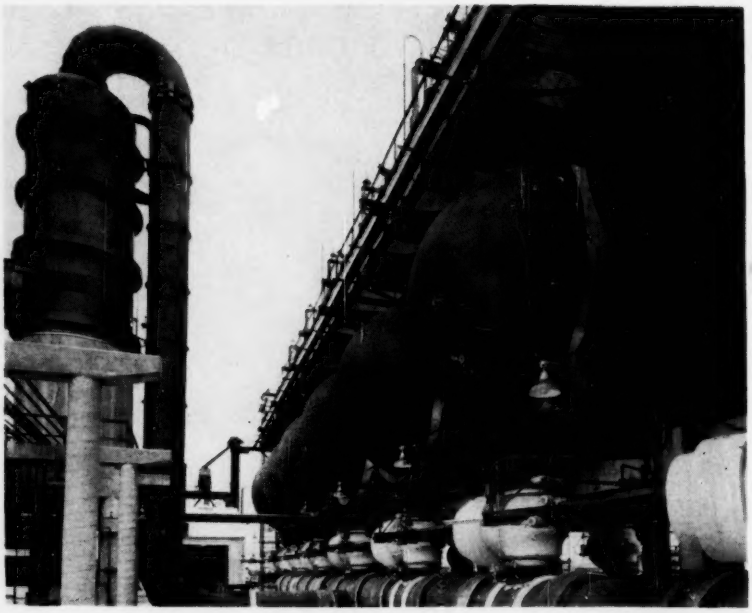
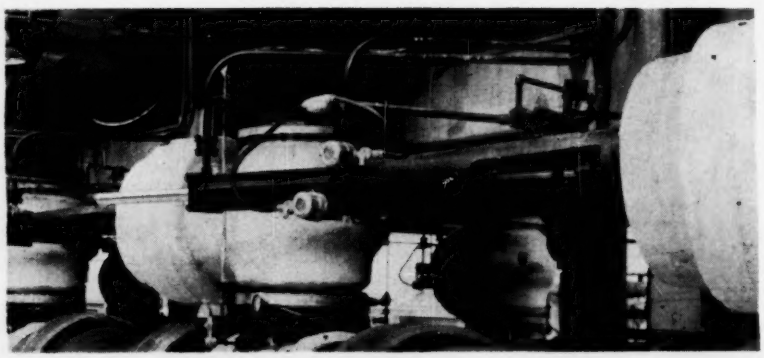


Texas Butadiene's new plant features unique control system, . . .



. . . uses integrated hydraulic system for regulating process flow.

Hydraulics Turn the Valves

The hydraulically operated valves (*small picture above*) on Houdry dehydrogenation reactors in Texas Butadiene & Chemical Corp.'s $30-million Channelview plant at Houston are a new wrinkle in process automation. They're part of a novel control system, designed by Rivett, Inc. (Boston)—the first in a petrochemical plant of this size, and probably the largest commercial application of an all-hydraulic system in a cyclically controlled plant.

Design of the Channelview plant (it was engineered and built by Fluor) called for greater flexibility of control over the flow of butadiene reactants than could be achieved conveniently with conventional control systems. For this particular installation, says Rivett, air-diaphragm valves were too slow-acting, too limited in valve size; electric-motor control lacked the flexibility needed to compensate for changes in product viscosity, would have required prohibitively expensive, unwieldy installations to provide flexibility, high operating speeds.

Hydraulics Cut Costs: Rivett claims its hydraulic system has the desired precision and flexibility; in addition, it affords simplified operation, lower ini-

From "Dutch Boy" research ...a gellant that prevents hard settling in a broad range of finishes

In any paint, pigment particles tend to migrate.

As they separate, settle, float, or agglomerate, paint performance goes down. Hues change. Streaking appears. Hiding is lowered. Hard cake forms.

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Other "Dutch Boy" developments meet special compounding needs

There is DUTCH BOY BENTONE **34** gellant, for example. It improves paints, cosmetics, coatings and other compounds made with low polarity solvents. DUTCH BOY BENTONE **18-C** gellant does as much for such high polarity items as vinyl anti-fouling paint. DUTCH BOY BEN-A-GEL® gellant takes over in water-based compounds.

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tial investment and lower operating costs. Because it employs a single source of power at a central unit, hydraulic control saves power — requires only 30 hp. instead of the 400-500 hp. that would have been needed for an electrical control system.

Other advantages of TBC's hydraulic control system are its compact size — only about one-tenth that of an electric control installation — and its ease of adjustment. Rate of gate valve travel can be varied at any point in the stroke, says Rivett, slow starts or stops can be regulated by simple external valving.

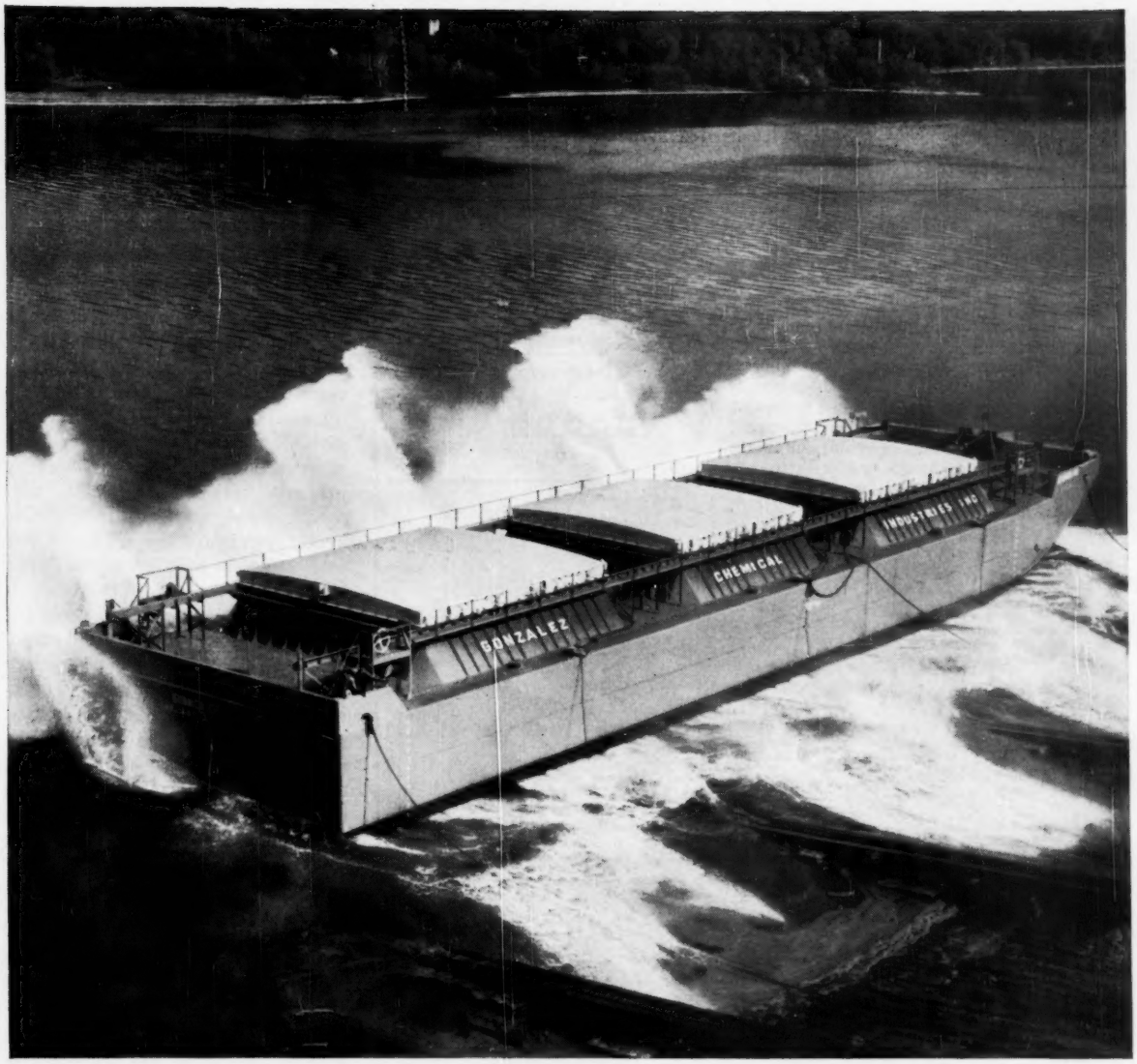
The central power unit for the system consists of two motor-driven, positive displacement pumps, with a third steam-turbine-driven pump on stand-by. To satisfy instantaneous power demands, thereby reducing over-all power requirements, the system includes ten 10-gal. hydropneumatic accumulators. These discharge about 20 gal. of oil every 3 minutes (peak demand time for the circuits).

Product gate valves ranging from 4- to 30-in. sizes are operated by small hydraulic cylinders, which in turn are actuated by solenoid valves located at central control panels. Operating times for the gate valves run from as low as 1 second for the small valves to 4 seconds for large ones.

One of the major problems faced by Rivett engineers was the need to provide low closing pressures to avoid seat jamming, high opening pressures. This they accomplished by the use of pressure-reducing valves on the closing ports. Other modifications had to be made to provide a long, slow opening cycle for one key valve on each of the plant's seven reactors.

Operation of systems is controlled by a master cycle timer on each of the reactor trains. The timer triggers the valves, checks their movement, sounds an alarm when any control component fails to respond properly. The reactors operate on overlapping 21-minute cycles; each unit is onstream 9 minutes, on regeneration 9 minutes with 1½ minutes each for purging and switching operations.

The success of the TBC installation, predicts Rivett, will open the way for hydraulic control of product flow in many other branches of the chemical process industries.



1500-ton fertilizer barges for Puerto Rico

Gonzales Chemical Industries, Inc., uses two of these 177-foot barges to transport chemical fertilizers between Puerto Rico and neighboring islands. Designed especially for this job, these barges were launched at our Wilmington, Delaware yard.

Dravo hatch covers protect cargoes from weather and sea water. These watertight covers, equipped with quick acting clamps and adjustable rollers, readily expose up to 50% of the hatch area for speedy loading and unloading.

Towing characteristics were checked by model basin tests to assure performance. Careful engineering and design know-how gained through building more than 3,700 hulls qualify Dravo as a supplier of marine equipment for both deep water and river operation.

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Northwest Parley

Cruises on Puget Sound, sight-seeing junkets to Mt. Ranier and baked salmon dinners were some of the treats enjoyed by more than 500 engineers who gathered last week at Seattle's Hotel Olympic for the 36th national meeting of the American Institute of Chemical Engineers.

In addition to their first-hand views of the scenic beauties that lure vacationists to the Pacific Northwest, conferees attending the 10 technical sessions of the three-day program learned of the area's growing attraction for industrial residents.

Stanford Research Institute's Carl Trexel highlighted the impact of natural gas on the economy of the Pacific Northwest. To date, hydroelectric power, wood and wood wastes, imported petroleum products and manufactured gas have been the important residential and industrial energy sources. But the coming of natural gas to the region, said Trexel, introduces a new factor in determining whether a new plant will be located in the Northwest or in California.

Although the economic impact of natural gas will be appreciable, concluded Trexel, it may be hard to define immediately. It's expected that natural gas will capture a large percentage of the growth in residential, commercial and industrial fuel markets, as well as replace a fair share of the conventional fuels. The price of natural gas will help stabilize Northwest industrial fuel costs at levels comparable to those in California. In effect, said Trexel, this means that one of the barriers—which new industry has always had to face in evaluating plant sites in the Northwest—is now removed.

At the opening-day symposium on electrochemical engineering, H. A. Sommers, of Air Products, Inc. (Allentown, Pa.), presented an up-to-date appraisal of horizontal and vertical mercury cell developments in the U. S. and Europe. To help industry decide on the best type of cells for future installations, Sommers offered the following conclusions, based on his observations in plants on both sides of the Atlantic:

The trend is away from diaphragm cells and toward much larger mercury cells. Reasons: capital and operating costs of the latter are generally

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When they're trying to locate a supplier, they come to the BUYERS' GUIDE . . . in fact, 93% of the users cite this as their primary purpose.

If you are an advertiser, your name will stand out in boldface whenever it is listed, and your ad next to the product category tells the prospect you have what he needs. Your catalog insert, giving him a run-down on your complete line, is cross referenced every time your name appears.

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Excellent opportunity for aggressive man to join Spencer Chemical Company's expanding plastics market development program, which will permit him to utilize his sales and technical ability. We are seeking a man who has a chemical or engineering background, and probably three to five years experience. It is desirable that he be familiar with the field of thermoplastics, preferably with thermoplastics processing experience. Please send detailed resume of personal data, experience, education and present salary to:

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SALES

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Chicago area resident with a Chemical Degree and sales experience to assume immediate charge of field office. Sales potential of the area plus the challenging nature of the position make this a tremendous opportunity. Applicants are invited to mail resume to Personnel Department, **GEIGY INDUSTRIAL CHEMICALS,** P. O. Box 430, Yonkers, New York, or phone Chicago office, State 2-3538.

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Position Vacant

Opening for research and development chemist experienced in the manufacture and various uses of protective coatings, wax, wax compounds, resins, polymer dispersions, plastic, and bituminous materials in industrial manufacturing company laboratory located in Middle West. Apply by letter giving full details of education and experience. All replies will be confidential. P-5213, Chemical Week.

Selling Opportunity Offered

Established fabricator of tungsten carbide, with many applications in the chemical, pharmaceutical and plastics industry, has need of better coverage in all parts of the U.S. Excellent opportunity for men with a following in this market. High commissions. RW-5365, Chemical Week.

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Sales & Marketing Executive. Mature, seasoned and aggressive executive—39—capable of handling sales and marketing management in all its facets on a broad industrial, agricultural and consumer chemical specialties scale in national markets—seeks a responsible position. Available on a 30—60 day termination notice. Has a wealth of product marketing & development experience with top name companies in chemical and allied industries; plus a record of achievement. Handled sales in 7-8 figure volume. He can sell, he can direct, he has vision and integrity. If you have a position open; if you are contemplating a staff addition;—you ought to look at the applicant. Salary requirements range $15,000. PW-5116, Chemical Week.

Chemist—Age 26—Desires position in chemical sales. Three years experience technical service department of company serving metal finishing industry. Prefer Western Michigan or vicinity. PW-5414, Chemical Week.

Organic Chemist: Broad experience in research and development of textile chemicals, surface active compounds, thermosetting resins, intermediates. Desires advanced position. PW-5415, Chemical Week.

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Vulcan 6' dia. x 60' long Rotary Hot Air Dryer ½" thick Shell, with burner and motor. Perry, 1415 N. 6th St., Phila. 22, Pa.

1-400 square foot stainless steel Sheel and Tube Condenser. 169-1" OD tubes 18 ga. x 115" long. Perry, 1415 N. 6th St., Phila. 22, Pa.

(1) Double Effect Evaporator, Nickel Contact Parts 650 sq. ft. total surface area. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

T316 S/S Plug Valves 300# WP Lubricated, Durco flgd. & sock. weld. Unused. Sizes ½" to 4". Anchor Supply, 1742 4th South, Seattle 4, Wn.

2 Stainless Steel Dust Collectors, 4' diameter x 14' long—Bargain price. Cherry Burrell Corp., Cedar Rapids, Iowa, Contract Dept.

Good Used Equipment of all types. Before buying elsewhere try General Equipment & Trading Co., 2615 Grand Ave., Chicago, Ill. ARmitage 6-8050.

For Sale: 30 Gal. W & P Double Arm Mixer; also 50 Gal. Dough Mixer, can filling machines to handle pastes. Plastics & Chemicals, Box 235, Bedford, Ohio.

Wanted

Wanted: One used pebble mill 125—200 gal. give condition & price. PW-5366, Chemical Week.

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The Formulating of Sanitation Products, Industrial Metal Cleaners, Specialty Items, to your Specification our Specialty, Overton Chemical Sales, Sumner, Iowa.

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the box number when answering advertisements. It is the only way we can identify the advertiser to whom you are writing.

Bids: July 5, 1957

Sale of Vanadium Pentoxide

The Atomic Energy Commission has on hand at Grand Junction, Colorado, approximately 4¼ million pounds of fused vanadium pentoxide (V_2O_5) which has been determined to be surplus to the needs of the Government. This V_2O_5 is contained in the vanadium concentrate packed in 30-gallon steel drums.

To avoid significant impact on commercial markets, which might occur should all of this material be sold at one time, as well as to obtain the best recovery to the Government, the AEC has been working closely with the Business and Defense Services Administration, Department of Commerce to determine how much V_2O_5 should be sold at what intervals. As a result, the AEC has developed a sales program whereby approximately one-half million pounds of contained V_2O_5 will be offered for sale, periodically, probably at intervals of from four to eight months, depending upon market conditions.

It is the opinion of AEC and BDSA that the sale of V_2O_5 in this manner will not unduly affect the commercial market. However, the AEC will carefully evaluate the results of each offering and, with the continued assistance of BDSA, will make such adjustments in the sales program as may be in the best interests of the Government and which will have the minimum impact upon industry.

In consideration of the foregoing, the AEC does not intend to sell any V_2O_5 at a price that does not bear a reasonable relationship to the present market price for carload sales, which our studies indicate have been averaging about $1.22/lb. FOB Grand Junction. This average price does not include sales under term contracts and for less than carload lot sales, which have been averaging lower and higher respectively.

The first offering will be made June 5, 1957, with bids to be received at Grand Junction, Colorado, by 2:00 P.M., July 5, 1957. Copies of the invitation to bid and further information may be obtained from the Manager, Grand Junction Operations Office, Atomic Energy Commission, Grand Junction, Colorado.

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PRODUCTION

lower; purified diaphragm caustic, though satisfactory for most purposes, can't quite compete with mercury-cell caustic in purity.

Horizontal cell development has proceeded about as far as it can go, said Sommers. Advantages of the vertical cell — if realized — may make the horizontal cell obsolete.

Significant for pulp and paper processors was the report by W. G. Meyer and James Coma, of Crown Zellerbach Corp. (Camas, Wash.), on the production of dimethyl sulfide from kraft pulp mill black liquor (*CW, Jan. 7, '56, p. 50*). CZ's pilot at Camas was described as "in final development stages to obtain dimethyl sulfide in maximum yield."

Designed to produce nearly 2 million lbs./year, the pilot unit has achieved yields of about 60 lbs. of dimethyl sulfide per ton of pulp from reactions in the range of 450-500 F. This process, said Meyer and Coma, not only increases the profitability of wood utilization but also provides dimethyl sulfide at a cost "favorable to its accelerated use as a chemical intermediate in industrial applications."

EQUIPMENT

Water Analyzer: Fisher Scientific Co. (Pittsburgh) is offering a new portable laboratory for measuring bacterial pollution in water. Called Sabro Lab, the unit was developed at Johns Hopkins University, is manufactured by Salem-Brosius, Inc. Analyzer uses the membrane-filter technique, provides space for 18 samples to be incubated simultaneously at constant temperature.

•

Rapid Reproduction: High-volume users of diazoprints are offered a new, high-speed ammonia-developing diazotype printer by Tecnifax Corp. (Holyoke, Mass.). Dubbed Hi-Q Diazoprocesser, the machine uses a 150-watts/in., high-pressure mercury-vapor lamp, which permits electronically controlled printing speeds of 125 ft./minute. Operating characteristics: 220 volts, single phase, 60 cycles, 90 amps.

•

Hydraulic Miniatures: To complement its line of miniature hydraulic pumps, Oil-Dyne, Inc. (Chicago), is producing 3,000 psi., noncushioned hydraulic cylinders in five sizes from ½- to 1½-in. bores.

CHEMICAL WEEK • ADVERTISERS INDEX
JUNE 22, 1957

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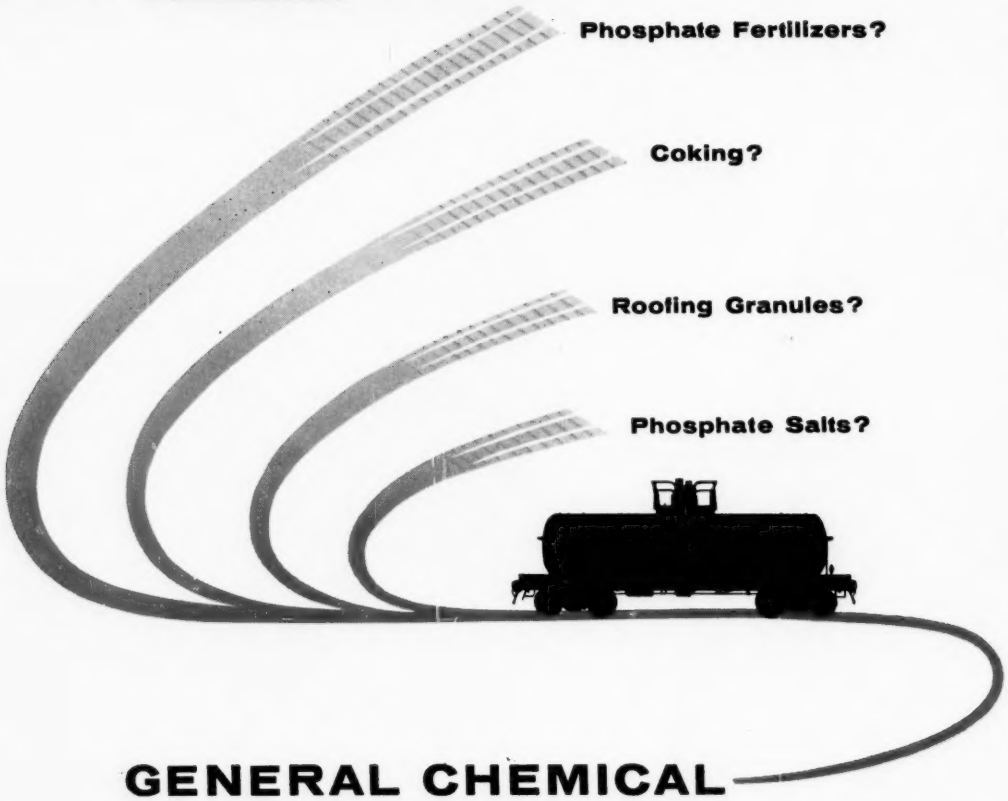

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